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Early, Rhode Island Textile Mill Village: A Study of the Origins and Early Examples of a Community Form

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EARLY, RHODE ISLAND TEXTILE MILL VILLAGES

A STUDY OF THE

ORIGINS AND EARLY EXAMPLES

OF A COMMUNITY FORM

BY

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ABSTRACT

Textile mill villages are a common community form in Rhode Island, the building of which spanned a century. The first period of mill village construction began about 1805 and lasted through 1815 when the War of 1812 ended. This thesis attempts to determine the origins of the plans of early, Rhode Island mill villages, describes the plans of three mill villages, Slatersville (1806), Hope (1807), and Georgiaville (1813), and places the plans of early mill villages in the context of the New England community planning tradition.

The thesis reviews the architecture and planning practices of New England and Rhode Island, economic and social conditions, and the progress of the textile industry relevant to the development of the first mill villages in Rhode Island. The requirements of the factory system of textile production are examined to ascertain their role in the planning of the villages. Among the more important factors identified as having had the potential of influencing the plans of early Rhode Island textile mill villages are: a tradition of nucleated villages; and architecture that stressed economy, simplicity and refinement; a society

based on commercial activity, that was conservative; an association of textile production with the public interest; a need for water power; factory buildings; a need to attract labor, and a desire to counter a national bias against manufactures.

To determine how the factors were manifest, the plans of three early, Rhode Island mill villages, Slatersville, Hope, and Georgiaville, are analyzed. The development undertaken in these villages during the early period of the textile industry's progress in Rhode Island (1790-1830) is considered.

All three were nucleated villages with vernacular architecture. In Slatersville and Hope the layout was linear, and the architecture was republican. In Georgiaville, there was some departure from traditional practices, but the overall and essential character of the village is similar to Slatersville and Hope.

The conclusion is that with exception of the introduction of the textile factory as a central feature in the village, the early Rhode Island textile mill villages represent a continuation of traditional community planning practices.

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CHAPTER I

INTRODUCTION

In Rhode Island, the mill villages are common community forms found throughout the State along the rivers and streams that provided power to drive the machinery of the textile factories. On some stretches of river the villages are so close together that they form an almost unbroken ribbon of development.

The mill villages established by textile manufacturing companies range in size from hamlets with a factory and a few company houses to modest towns with a large factory, company houses and boarding houses, a church, a store, and possibly a bank, a hotel and a school: The essential feature is that the factory, the housing and other buildings were built as a discrete community by a company in a textile manufacturing venture.

The development of the community form was allied to the progress of the textile industry in Rhode Island. While Rhode Island was an English colony, textile manufacture remained handicraft. A transformation commenced when, in 1790, the firm of Almy and Brown, relying on the technical ability of Samuel Slater, spun cotton yarn with water-powered machinery, the factory system of production had

been introduced. A gestation period lasted until 1810[1] and then industry passed through a two decade period of technological infancy--in 1810 power driven machinery was used for only spinning processes in textile production, but by 1830, "all but two processes in cloth manufacturing had been mechanized."[2] From 1830 to the Civil War,[3] the industry expanded and grew; after the Civil War, it entered a period of successful maturity that lasted until 1910.[4] Since 1910, the manufacture of textiles in Rhode Island has generally declined.[5]

During the century in which the Rhode Island textile industry progressed from infancy through pre-eminence to decline, the character of the mill villages changed. Early mill villages, which Zachariah Allen, a prominent Rhode Island textile manufacturer and businessman, described as "little hamlets, which often appear to spring up

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[1]Charles T. James, Practical Hints on the Comparative Cost and Productiveness of the Culture of Cotton and the Cost and Productiveness of its Manufacture, Addressed to the Cotton Planters and Capitalists of the South, (Providence: Joseph Knowles, 1849), p. 46.

[2]Paul F. McGouldrick, New England Textiles in the Nineteenth Century: Profits and Investments, (Cambridge, Mass.: Harvard University Press, 1968), p. 18.

[3]Caroline F. Ware, The Early New England Cotton Manufacture; A Study of Industrial Origins, (Boston: Houghton, Mifflin Company, 1931), pp. 98-103.

[4]Kurt B. Mayer, Economic Development and Population Growth in Rhode Island, (Providence: Brown University, 1953), pp. 42-54, passim.

[5]Mayer, Economic Development and Population Growth in Rhode Island, pp. 55-70, passim.

in the bosom of some forest, gathered around the waterfall that serves to turn the mill wheel,..."[6] have been appreciated as felicitously planned, homogeneous communities.[7] Mill villages built after the Civil War tended to be somewhat rigid repetitions of a successful basic plan.[8]

The changes in the community form proceeded from the interaction of many forces including economics, politics, religion, technology and business organization. For example, advances in building technique permitted the construction of larger factories which could house more machinery. The labor force in the factory had to be increased in size or used more efficiently, and if increased in size, the need for housing was affected. Thus an advance in building technique could have considerable impact on mill village form: the architectural scale of the factory, the principal building, and its relationship to other buildings might be changed, and too the number of housing units built near the factory for the workers

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[6]Zachariah Allen, The Science of Mechanics, (1829) quoted in Richard M. Candee, "The Early New England Textile Village in Art," Antiques, 98 (December, 1970): 910.

[7]Examples of critical appreciation of early mill villages can be found in A. N. Fowler, "Rhode Island Mill Towns," Pencil Points XVII:5, pp. 271-286; Henry Russell-Hitchcock, Rhode Island Architecture, (Providence: Rhode Island Museum Press, 1939), pp. 36-43, and John Burchard and Albert Bush-Brown, The Architecture of America: A Social and Cultural History, (Boston: Little, Brown and Company, 1961), p. 107.

[8]Samuel Green, "Rhode Island Mills and Mill Villages," (Providence: Typewritten Text for Photographs

might be increased. The developments affecting mill village form were numerous.

The specific, regional character of the Rhode Island textile industry was recognized before the middle of the nineteenth century[9] and continued to be recognized in the twentieth century.[10] The Rhode Island industry's special character imparted certain qualities to the mill villages giving them a distinctive form. For example, the family system of labor was used in early Rhode Island textile mills, while in the factories built according to the Waltham system in northeastern Massachusetts and southern New Hampshire and Maine employed female operatives; as a consequence, the predominant housing forms in Rhode Island mill villages are cottages and tenements for the families engaged in mill work; in the Waltham system towns, boarding houses were built for the female operatives--usually the unmarried daughters of Yankee farmers.

What were the origins of Rhode Island mill villages; What caused the form to change; and, What were the essential features of the form at each stage of its development?

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by Joseph McCarthy, Rhode Island Art Project - Works Projects Administration, 1940), p. 30. The photograph collection is housed in the Nickerson Architectural Collection, Providence Public Library.

[9]James Montgomery, The Cotton Manufacture of the United States compared and contrasted with that of Great Britain, (Glascow: John Nevers, 1840), p. 14.

[10]J. Herbert Burgy, The New England Cotton Textile Industry; A Study in Industrial Geography, (Baltimore: Waverly Press, 1932), pp. 27-28.

The first Rhode Island mill villages were built after 1805, or in the second half of the early period of the textile industry's development. In these first villages traditional community building practices were either continued or departed from, or the elements of continuation and departure were mixed.

A community planning tradition has many elements. Most obviously, there are the inherited practices of building and activity arrangement and architecture. A community is also an embodiment of its society--for example, the type and arrangement of buildings and activities of a society based on extended, communal living groups probably differ substantially from those of a society based on independent, nuclear families. Economic organization is also a giver of community form--think of the tents of a nomad and the keep of a feudal baron.

To appreciate the extent to which early mill villages represented a continuation of traditional practices and the extent to which they represented a departure from those practices, the community planning tradition as it pertained to textile mill villages must first be examined. In Rhode Island, what were the established architectural and planning practices, the prevailing economic and social conditions, and the customs associated with textile production?

This thesis attempts to determine the extent to which early mill villages represented a continuation of

traditional Rhode Island community building practices and the extent to which they represented a departure from those practices. The methodology used to make these determinations is presented in the next chapter. In Chapter III, community form in New England and Rhode Island is discussed as a shape in time--the evolution of colonial New England vernacular architecture[11] and of informal New England village plans is reviewed. In the Appendix, information is developed about factors that had the potential of influencing both the traditional community form and the community form of early, Rhode Island textile mill villages. The fruits of the research presented in the Appendix is given in Chapter IV, "Potential Influences on the Community Form of Early Rhode Island Textile Mill Villages." The plans of early textile mill villages are discussed in Chapters V and VI.

Thus, this thesis deals with several questions: What was the community building tradition in Rhode Island? What were the forces that reinforced that tradition and what were the forces for change? What was the community form in several early textile mill villages and how did that form embody the forces for continuation of the traditional practices and the forces for change?

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[11]In this thesis the phrase "vernacular architecture" is used to denote a building style that has evolved or is inherited and is commonly employed by local craftsmen and that is peculiar to a region or people.

CHAPTER II

METHODOLOGY

Physical planning "locates structures and activities in three dimensional space," and is "the art of arranging buildings on the land in harmony with each other;"[1] a good plan optimized the buildings' usefulness and promotes the well being of the people in the community. Planning is interdisciplinary--to accomplish his purposes, a planner must appreciate the contribution to the knowledge of community form and function of a number of fields of study: sociology, economics, political science, law, history, architecture, landscape architecture, environmental sciences, and civil engineering. So for example, Rhode Island enabling law gives municipal planning commissions the power to study and plan for:

"1. Land use and land use regulation.
2. Transportation facilities.
3. Public facilities including recreation areas, utilities, schools, fire stations, police stations, and others.
4. Blighted areas including the designation of general areas for redevelopment, renewal, rehabilitative or conservation.
5. Problems of housing and the development of housing programs.
6. Environmental protection.
7. Natural resource conservation.

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[1]Kevin Lynch, Site Planning, (Cambridge, Mass.: M.I.T. Press, 1962), p. 4.

8. Protection from disaster.
9. Economic and social characteristics of the population.
10. Preservation of historic sites and buildings.
11. Economic development."[2]

Planning can be defined as a formal discipline which seeks to resolve a number of requirements, factors, and forces to produce a design.[3]

This thesis uses the planner's ability to assess and relate different factors as they pertain to community form, and it reviews those factors as trends, not just as conditions at a single point in time.

In the study of conditions over time, there is a nexus between planning and history. Planners, in their efforts to understand communities, rely heavily on the analysis of trends and investigate conditions at different points in time in order to draw conclusions. Of historian's work George Kubler has observed:

> "The historian's special contribution is the discovery of the manifold shapes of time. The aim of the historian, regardless of specialty in erudition, is to protray time. He is committed to the detection and description of the shape of time...in his search for the identity of the subject, (he) must discover a patterned set of properties that will elicit recognition all

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[2]R I. General Laws, 45-22-7 (A).

[3]This definition is adapted from Christopher Alexander, Notes on the Synthesis of Form, (Cambridge, Mass.: Harvard University Press, 1964), pp. 55-70.

> the while conveying a new perception of the subject."[4]

The question with which this thesis deals is what were the origins of early Rhode Island textile mill villages and how were these origins manifest in the villages. This is similar to the question that a planner dealing with urban renewal confronts in asking what are the origins of blight in a community. However, the study of the origins of early textile mill villages is concerned with events in the more distant rather than the recent past. As a consequence, historical materials are analyzed. The thesis is a study of the trends, factors, and events over time, that contributed to the form of the early villages. The effort was not just to state the conditions immediately prior to the development of the villages and then to describe the villages, for this would have shed little light on the shape, the form of the community, in time.

The central problem around which this thesis is organized is to identify and assess the factors that provided the basis for the layout and organization of early Rhode Island textile mill villages. Arising from the interdisciplinary nature of planning, diverse but related concepts are available to investigate the problem; this thesis uses three concepts: 1) community form may

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[4]George Kubler, The Shape of Time, Remarks on the History of Things, (New Haven: Yale University, 1962), pp. 12-13.

reflect traditional community building practices, 2) community form is responsive to social and economic conditions, and 3) community form is influenced by the requirement of technology.

Slatersville, Hope and Georgiaville were commenced and achieved significant levels of development during the spinning phase of the textile industry which lasted in Rhode Island through the War of 1812. Slatersville is on the Branch River, a tributary of the Blackstone; Hope is on the Pawtuxet River; and Georgiaville is on the Woonasquatucket; thus the three watersheds most prominent in the early development of the textile industry in Rhode Island are represented. Mill houses and mill buildings from the spinning phase of the textile industry survive in each of the villages. According to Sande's Catalogue of Pre-1860 Mill Sites, 85 mill sites were developed outside the settled Providence-Pawtucket area between 1790 and 1815, but in only seven of these villages do early textile factory buildings survive.[5] No study has been conducted which indicates how many of these mill sites were developed with supporting mill villages.

The third step in the thesis methodology is the analysis of the mill village plans in terms of the historical generalizations derived in the first step. The third

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[5]Theodore A. Sande, "The Architecture of the Rhode Island Textile Industry, 1790-1860," Ph.D. dissertation. University of Pennsylvania, 1972, passim.

step is presented in Chapter V, "The Plans of Early Rhode Island Mill Villages," which also places the early villages in the context of the subsequent development of textile mill villages both in Rhode Island and in Massachusetts where the Waltham-Lowell system of production was used.

The thesis relies on the assumption that the factors which produced the layout and organization of the early textile mill villages can be identified from the conditions and traditions prevailing at the time the villages were built and in the requirements of the new textile industry.

There are three sections or steps in the thesis' methodology. The first step is historical analysis. The evolution of the New England village form is examined (Chapter III, "The Community Planning and Architecture Tradition"). A shape in time is established. The forces that with the introduction of the factory system of textile production served to continue or alter that shape are summarized (Chapter IV, "Factors that had the Potential of Influencing the Plans of Early Rhode Island Mill Villages"). These forces are explored more fully in the Appendix.

In the second step, the plans of Slatersville, Hope, and Georgiaville are reviewed. These villages were selected on the basis of the following criteria: date of construction, location, extent early buildings (photography is used to show the relationship of the buildings to each

other and to architecture and planning traditions, as there is no substitute for getting a sense of a place firsthand), the importance of the village in the early Rhode Island mill village development, and the quality of the plan.

The lack of studies of the evolution of the New England village form, of the economic and social forces that influenced the physical development of the early textile industry as they pertained to the construction of the villages was a major factor that shaped the research and its presentation in the thesis. Numerous other studies touched on these topics, and so the effort was one of synthesis to produce the necessary information. The fruit of this research is presented in Chapter IV and in the Appendix.

CHAPTER III

THE COMMUNITY PLANNING AND ARCHITECTURE TRADITION

Community Planning and Architecture In Colonial New England

Community planning and architecture are inseparably related: planning "locates structures and activities in three dimensional space" and is "the act of arranging buildings on the land in harmony with each other."[1] The placement of buildings and land uses, the layout of the community, is two dimensional, architecture and topography supply the third dimension. Architecture is thus an integral part of a community's plan.

In the New England village, the elements of the third dimension give the community's plan its special quality. After a careful review of the plans of some New England towns, John Reps concluded:

> "...the very real visual distinction of the New England village stems less from the merits of their two dimensional plans than from the combination of building and plant materials.... So while the plans were simple but varied, it is the third dimension of the villages that is cherished. The scale, the

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[1]Kevin Lynch, Site Planning, (Cambridge, Mass.: M.I.T. Press, 1962), p. 4.

> materials, the architectural design inherited from abroad but modified to meet the new environment--all combined with the village layout to produce a total quality of community that has yet to be equaled in America except in isolated towns of outstanding character."[2]

Colonial Rhode Island architecture and community planning, is a variety of New England architecture and community planning: certain features are held in common with the other New England states, other features are relatively distinctive.

Community plans, including architecture, do not develop in a vacuum. Economic, social and environmental forces have a powerful influence, prescribing the possible options. Philosophy is also a principal determinant of a community's plan, for it "...is precisely the idea of what forms may most appropriately be selected which creates the architecture of a particular age."[3] In New England, Puritanism had a profound impact on the plans of the villages.

The first New England colonists arrived in, what was for them, a wilderness with comparatively few inhabitants. The indigenous development was alien to the European civilization the colonists had left and not readily adaptable to the life colonists intended for them-

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[2]John W. Reps, The Making of Urban America, A History of Urban Planning in the United States, (Princeton, J.J.,: Princeton University Press, 1965), p. 128.

[3]Peter Collins, Changing Ideas in Modern Archi-

selves and their families. Although the colonists lacked prior knowledge of conditions in North America, "they possessed nevertheless elaborate resources to interpret the meaning of their endeavors. Biblical references to the wilderness are manifold, and (these early colonists) well understood the significance of the wilderness in historical Christianity."[4] Intending to build good societies in the wilderness and lacking indigenous forms from which to draw, the colonists who were English, rural and Protestant,[5] devoted themselves to recreating the towns and villages they had know.[6] These were "nucleated villages with home lots grouped closely together and a land system that extended from the nucleus."[7] The dwellings in the early settlements were modeled after the English Yeoman's house,[8] which itself retained medieval building practices.[9] The first New England settlements

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tecture, 1750-1950, (Montreal: McGill University Press, 1967), p. 16.

[4]Peter N. Carroll, Puritanism and the Wilderness, (New York: Columbia University Press, 1969), p. 61.

[5]Anthony Garvan, The Architecture and Town Planning of Colonial Connecticut, (New Haven: Yale University Press, 1951), p. 18.

[6]Wendell D. Garrett, "Note on 'Plans of an American Country Town', 1769-1770," Old Time New England, L III (Summer, 1962), p. 11

[7]Ibid., p. 11.

[8]Garvan, Architecture and Town Planning, pp. 122-123.

[9]Carl W. Condit, American Building Art, The 19th

were thus transplants of seventeenth century English rural life.

From the outset, New England settlements had a consonant homogeneous appearance not because they were designed by a single architect, but because they grew out of a common tradition.[10] The traditional practices brought over by the colonists were rigorously systematized and as a result the new settlements were more uniform in aspect than those left behind in the mother country.[11] The early colonists were not given to innovation,[12] so once they had begun building their settlements in this manner there was little thought of variation or experimentation for its own sake.

The medieval practices of vernacular architecture and informal planning were continued by the colonists. In the seventeenth century, formal architecture and planning was, for the most part, either domestic, ranging from palaces to garden pavilions, or religious, ranging from monasteries and cathedrals to wayside shrines.[13] To the Puritan mind of early New England, such forms of building were associated with Anglican or Catholic authority toward which was felt bitter hostility.[14] No settlement

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Century, (New York: Oxford University Press, 1960), p. 10.

[10]Garvan, Architecture and Town Planning, p. 78.

[11]Vincent Scully, Architecture and American Urbanism, (New York: Frederick A. Praeger, 1969), p. 29.

[12]John W. Reps, The Making of Urban America, p. 1.

[13]Peter Collins, Changing Ideas, p. 219.

with a barogue plan, such as Annapolis's or Williamsburg's, was built in New England.[15]

Early New England settlements took two basic forms, a "compact, 'squared' community in which grid iron streets were normally employed" and a linear community in which "a single street form(ed) the spine of the settlement."[16] The settlements were generally established by proprietors who were the original grantees or purchasers of the tract of land on which the settlement was built, and who, with those whom they chose to admit to their number, enjoyed absolute ownership and exclusive control over the tract. With responsibility for enlisting settlers, locating home lots and houses, building highways and streets, subdividing arable land, and initially managing common meadows and forests, the proprietors determined the character of the settlement.[17] The proprietors' first concern in locating a settlement was that there be adequate means of communication with the civilized world, and the second concern was that there be the essentials for the settlement's economic life.[18] Then following the survey and division of

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[14]Condit, American Building Art, p. 10.

[15]Reps, Making of Urban America, p. 124.

[16]Ibid., p. 124.

[17]Roy H. Akagi, Town Proprietors of the New England Colonies, (Gloucester, Mass.: Peter Smith, 1963), pp. 2-3.

[18]Ibid., p. 85.

the land into lots according to shares, the proprietors at their first meeting decided the general plan of the town: the location of its highways, roads and streets, its center or common, its burying ground, and the arrangement of the home lots, farms, and pastures.[19]

The resulting settlements had common features from which evolved the New England village. The first was a regularity of plan that arises from "man's almost instinctive use of geometry in laying out new towns when speed and simplicity are the dominant requirements,"[20] and that is "archetypically colonial."[21] A second feature was "the sharp break between the village and the countryside."[22] Home lots were usually grouped around an open space where the meeting house was erected.[23] A third feature which was common but not universal was that a limit was set on the settlement's population.[24] In settling Springfield, Massachusetts, for example, it was decided at the proprietor's meeting of May 14, 1636, "that our town shall be

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[19]Akagi, Town Proprietors, p. 85.

[20]Reps, Making of Urban America, p. 126.

[21]Scully, Architecture and American Urbanism, p. 29.

[22]Reps, Making of Urban America, p. 125.

[23]Ibid., p. 120.

[24]Ibid., p. 124.

composed of forty families or if we think it meet after to alter our purpose, yet not to exceed the number of fifty families rich and poor...."[25] At their February 5, 1649 meeting, the Springfield proprietors decided that the subdivision of lots and the use of a lot by more than one household was prohibited without approval of the selectmen.[26]

Some New England settlements had origins other than English agricultural villages. Prior to establishing colonies in America, the English had founded colonies in Ireland where two distinct plans were tried: tenant villages and military settlements closely resembling continental bastides.[27] A few New England villages originally had direct antecedents in the Irish experience. Lord Saye and Sels, who had holdings in Ulster, Ireland, employed Lion Gardiner, a military engineer to lay out Saybrook, Connecticut.[28] Yet not withstanding their diverse origins and initially different character, such settlements developed the essential features of the characteristic New England village.

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[25]Henry Morris, "Early History of Springfield," in Alden T. Vaughan, ed., The Puritan Tradition in America, 1620-1730, (Columbia, S.C.: University of South Carolina Press, 1972), p. 192.

[26]Ibid., p. 192.

[27]Garvan, Architecture and Town Planning, p. 20.

[28]Ibid., p. 43.

Seventeenth century New England settlements were but the forebearers of the prototypical New England village which is so easily recognized and so widely acclaimed. The early settlements were transplanted English agricultural hamlets. The dwellings were asymmetrical in plan; windows were small and not placed on the facade to give a balanced appearance; exterior walls were sheathed in unpainted clapboards; massive stone chimneys often formed an end wall; the second story, when there was one, usually protruded beyond the first. The aspect was distinctly medieval. These dwellings, most of them small, were clustered together in small villages and were subjected to a harsh climate. Developed by a peculiar element of English society, the early settlements evolved into a new community form, the New England village.

The early colonists' life in the New World caused them to change the patterns of development they had assumed desirable. For example, the new settlements often had their street plans altered rapidly in a piecemeal fashion.[29] In eastern Connecticut and Rhode Island, settlements were shaped in their development by their site and the contours of the shore.[30]

The change in the form of the village plans did not alone produce the New England village. The medieval

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[29]Garvan, Architecture and Town Planning, p. 11.

[30]Ibid., p. 42.

English yeoman's house and the other building types brought over from the mother country were adapted to the new environment. The New England environment had some substantial differences from the English, and these differences began to affect the architecture of the New England settlements. Generally, terrain and climate influence architecture: "...site gives to a structure its roots in the ground: it acts as its orientation, relating house to landscape and to other settlements. Climate is a collateral form giver. It influences the rhythm of mass and perforation."[31] In house building, "soundness and convenience, light and heat are the great essentials."[32] The more severe climate, especially the colder winters, exerted a definite influence on the building of the New England settlers:

> The thatched roof (of the English House) was changed to shingles, creating a harder, tighter profile. The skeleton frame, which in English examples might be weatherboarded, plastered, tiled or left exposed as half-timber, was soon uniformly sheathed in thin, narrow American clapboards. Windows and doors were pushed tight up to the forward plane of the clapboards to keep a weather seal. The extremes of the American climate so played a part in closing the surface, making it more planar, more linear, and thinner than in the

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[31]Sibyl Moholy-Nagy, Native Genius in Anonymous Architecture, (New York: Horizon Press, 1957), p. 52.

[32]William R. Lethaby, Form in Civilization, Collected Papers on Art and Labour, (New York: Oxford University Press, 1957), p. 31.

general run of English houses.[33]

Economic circumstances complemented the forces of site and climate on the plan and architecture of New England settlements. Upon disembarking or upon arrival in further wilderness to establish a new community, the New England settler had to attend to the necessities of life. The most immediate concern was to obtain the food needed for survival. There was little time to spend on laying out an elaborate village plan or building fancy houses. Even when the settlement was secured and material well-being was possible, skilled labor was scarce. However, materials were plentiful, and this was the converse of the situation in Europe where labor was plentiful and materials scarce. These economic forces influenced New England architecture: "The plane surface, the flat wall of wood, brick, or stone--has always been a basic element in American architecture. In part this has been due to the simplicity which scarcity of skilled labor enforced..."[34] Three tendencies in New England building practices followed from the scarcity of labor: inventive improvization, specification and standardization. New England craftsmen reduced "the variants and differences among their inherited

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[33]Scully, Architecture and American Urbanism, p. 36.

[34]Siegfried Giedion, Space, Time and Architecture, (Cambridge, Mass.: Harvard University Press, 1965), p. 354.

European models to a few common denominators."[35]

The mutations in plan and architecture induced by site, climate, and economy found fertile ground in the proclivities of the Puritan sensibility that dominated New England:

> "...though Puritanism was a piety, it was at the same time an intellectual system, highly elaborated and meticulously worked out...carefully reasoned and solidly organized. A Puritan preacher never surrenders to feeling; he does not celebrate the glories of religion in sustained paeans or bring home its terrors by shouting, but argues his way step by step, inexorably disposing of point after point...watching for fallacies in logic...As far as possible he simplifies his explanations, avoids abtruse issues, demands no more of his auditors than he thinks necessary; even so he demands...close attention."[36]

How well this catches the sense of the New England village, its simplicity, its proportion and its refinement. These qualities were nurtured by the Puritans themselves, for "Puritanism was unascetic, it came to terms with this world...Puritanism taught that a man could serve God quite as effectually in his chosen calling as by entering the sacred ministry...."[37]

Significantly, writers and polemicists, not

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[35]Alan Gowans, Images of American Living: Four Centuries of Architecture and Furniture as Cultural Expression, (New York: J. B. Lippincott, 1964), p. 11.

[36]Perry Miller, The New England Mind: The 17th Century, (Cambridge, Mass.: Harvard University Press, 1967), pp. 67-68.

[37]Samuel Eliot Morison, The Intellectual Life of Colonial New England, (New York: New York University Press, 1956), p. 1.

architects lead the discussion of how to best lay out settlements in the colonies, and for these men "the ideal of an overall-planned homogeneous township remained powerful, reminiscent of a powerful tradition to regulate life in a rational pattern."[38]

New England villages reflected the character of their proprietors who believed that "next to the actual settlement of the township," the most important consideration was "the settling of an orthodox minister and the building of a public meeting house for the worship of God. To provide for the religious life of the inhabitants of the newly formed townships in this way was from the beginning one of the characteristic features of the New England towngrants."[39] Religious intensity was manifest in the New Englanders' community and abode; this is to be expected for "theocratic societies, since the days of Babylonia and Egypt, express themselves in prototype structures that receive their symbolic meaning from their standarized form of which the New England house is the late example."[40]

The architecture of houses, and it might well be added the three dimensional plan of the villages, "became simplified and clarified, the virtues sought were now

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[38]Garrett, "Note," p. 11-12.

[39]Akagi, Town Proprietors, p. 96.

[40]Moholy-Nagy, Native Genius, p. 111.

the elemental ones of strong obvious shapes and plain surfaces. Plan and structure, despite some variations, were also systematized...."[41] So,

> "New England architecture's ultimate derivation from deep Puritan sensibilities, encouraged by a colonial situation, should not be denied in favor of simple technological explanations. It was indeed middle-class building, self contained, even smug, not generous, but square and straight, like decency made visible, highly lit and clear."[42]

The New England village did not evolve in isolation. Men and ideas continued to immigrate throughout the colonial period. Some immigrants and sojourners had knowledge or recent architectural developments. So, in Connecticut, it has been observed:

> "...buildings and plans, essentially derivative in their nature, reflect the process of the colony's settlement. Radical changes in colonial style depended chiefly upon fresh immigrations, usually of persons familiar with European fashion or more rarely upon the importation of books illustrating new trends in European design."[43]

As the colonies became secure and prosperous, there was a growing tendency to display this well-being in more substantial, up-to-date and elaborate buildings. By the

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[41]Scully, Architecture and American Urbanism, pp. 36-37.

[42]Ibid., p. 39.

[43]Garvan, Architecture and Town Planning, p. 18.

middle of the eighteenth century, colonial interest in architecture had created a demand for books on the subject, which in turn, were regularly imported and advertised in colonial newspapers. The books advertised in Boston newspapers ranged from Ware's Paladio, or 4 Orders of Architecture to a work on The Manner of Securing all sorts of Buildings from Fire.[44]

By the early eighteenth century, the natural evolution of the medieval form, environmental adaptation and fresh architectural perceptions brought over from the Old World interacted to produce colonial baroque architecture which is characterized by a symmetrical plan, regular fenestration, and clear, simple forms. This is the colonial architectural form which has since been so much admired.

The flow of ideas from Europe did not stop once colonial architecture had evolved. Colonial building was not immune from European architectural fashions, yet their effect was generally superficial not profound: "...for as long as the carpenter worked by himself the classical influence was confined to little details like the fanlights, the moldings, the pillars of the portico and so on."[45]

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[44]George Francis Dow, The Arts and Crafts in New England 1704-1775, Gleanings from Boston Newspapers, (Topsfield, Mass.: The Wayside Press, 1927), pp. 221-223.

[45]Lewis Mumford, Sticks and Stones, (New York: Dover Publications, 1955), p. 16.

Importantly "the aesthetic excellence of...colonial architecture rested on a very simple and thoroughly structural base"[46] and not stylistic details and ornamentation subject to the vicissitudes of imported fashions. Thus the aesthetic excellence of colonial architecture could be maintained in remote areas, despite adverse conditions which often included a lack of skilled labor, scant knowledge of architecture, lack of wealth and little time to spend in elaborate building.

What is more, the Puritan-dominated New England intellect was, no doubt, unsympathetic to effusive architectural expression.

The New England village had emerged as a community form. The village of dignified houses with its heart in the meeting house and the common was laid out "in the best order to obtain two objectives: the first, the tillage and culture of the soil; second, the maintenance of a civil and religious society."[47] The quality of the form was not purely accidental--the conservative, middle class town proprietors knew from experience that their village had to have a felicitous plan to hold settlers.[48] In the villages, the New England sensibility sought "a classicism

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[46]Condit, American Building Art, p. 10.

[47]Mumford, Sticks and Stones, p. 3.

[48]Garvan, Architecture and Town Planning, p. 77.

in its own image...(of) reasonable, balanced, closed and ordered forms."[49]

The New England village was a dynamic form responding to changing conditions. Eighteenth century villages were different from seventeenth century villages; seventeenth century public concern and corporate sense were suffused with eighteenth century speculative zeal.[50] Dynamic, the form evolved. In Connecticut three stages in this process have been noted, first the nucleated village, then the transitional town and finally the colonial town.[51] However, "the fundamental mechanics of later town schemes changed but slightly from seventeenth century models."[52]

The New England village is a genuine community form; it has an essence of its own and is distinct from contemporary English villages of the same origins. Taken as a whole, the plan of the New England village has an integrity. Indeed, in some respects the community form "was abnormal, that is, it not only diverged from the experience of English society from which the newcomers immigrated, but it was also contrary to their expectation of what an American town plan should be."[53]

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[49]Scully, Architecture and American Urbanism, p. 11.

[50]Garvan, Architecture and Town Planning, p. 77.

[51]Ibid., p. 61.

[52]Ibid., pp. 61-62.

[53]Garrett, "Note," p. 11.

Community Planning and Architecture in Rhode Island

The development of community form in Rhode Island cohered generally with that of the rest of New England. In one important respect, however, the layout of Rhode Island settlements departed from that of the prototypical New England village: Rhode Island towns were not centered on a meeting house with a common. In spite of this anomaly, colonial Rhode Island towns indubitably have a New England character.

The distinctive features of Rhode Island community plans were a consequence of Rhode Island's being settled by an eddy off the mainstream of the Puritan theocracy that dominated most of New England. Both Roger Williams, who founded the Providence settlement in 1636, and Ann Hutchinson, who founded the Portsmouth settlement in 1637, were forced to leave Massachusetts because their religious opinions and practices could not be tolerated by the Puritan elders. But, like the Massachusetts Puritans, religion motivated their actions. Even Williams' determination that Rhode Island be founded on principles of religious tolera-

tion had a strong basis in his theology.

The policy of religious toleration made Rhode Island a haven for people whose religious beliefs made them unwelcome in the other New England colonies. As a result:

> "The homogeneity which marked Massachusetts and Connecticut was naturally lacking in the political and social composition of Rhode Island, and the towns of the new colony evidenced a strong sectional development which was reflected even in the architecture."[54]

The evolution of community was not uniform throughout the state. In northern Rhode Island, with Providence in the center, progress was slow until the end of the colonial period; in southern coastal Rhode Island, with Newport as the center, development was comparatively advanced.

"In Providence the first settlers were poor, drawn chiefly from the tradesman class of English cities and country towns, heady individualists often of a "contumacious disposition.'"[55] And during the first four years after its settlement, Providence was exclusively a community of planters.[56] The town was laid out according to the

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[54]Antoinette Downing, Early Homes of Rhode Island, (Richmond, Va.: Garrett & Massie, 1937), p. 8.

[55]Ibid., p. 9.

[56]John Hutchins Cady, The Civic and Architectural Development of Providence, 1636-1950, (Providence, R.I.,: The Book Shop, 1957), p. 13.

linear plan[57] with the principal street running parallel to the river and along the foot of the hill now known as College Hill. (See Map on Page 32). While Massachusetts and Connecticut towns focused on the meeting house, Providence "for almost sixty years was too riddled with dissension to build a church of any denomination."[58] Without a meeting house on which to focus communal life:

> "The earliest 'civic center' (in Providence) grew up in the vicinity of the falls of the Moshassuck... where the town grist mill was established in 1646.... Upon its erection the mill became the center of the town's activities. On every second and third day of the week it was used for grinding the corn of the town. On other days it served as a place for informal gatherings by the towns people and for occasional town meetings and religious services."[59]

The architecture of Providence was rude and medieval. The stone end houses, which had a great fireplace and chimney that took up most of an outside end wall, were usually one and a half stories high with a single room and a sleeping loft above; this plan "typified houses built in Providence up to 1676. The same plan was used in the first houses in Salem and Plymouth, but was soon modified in

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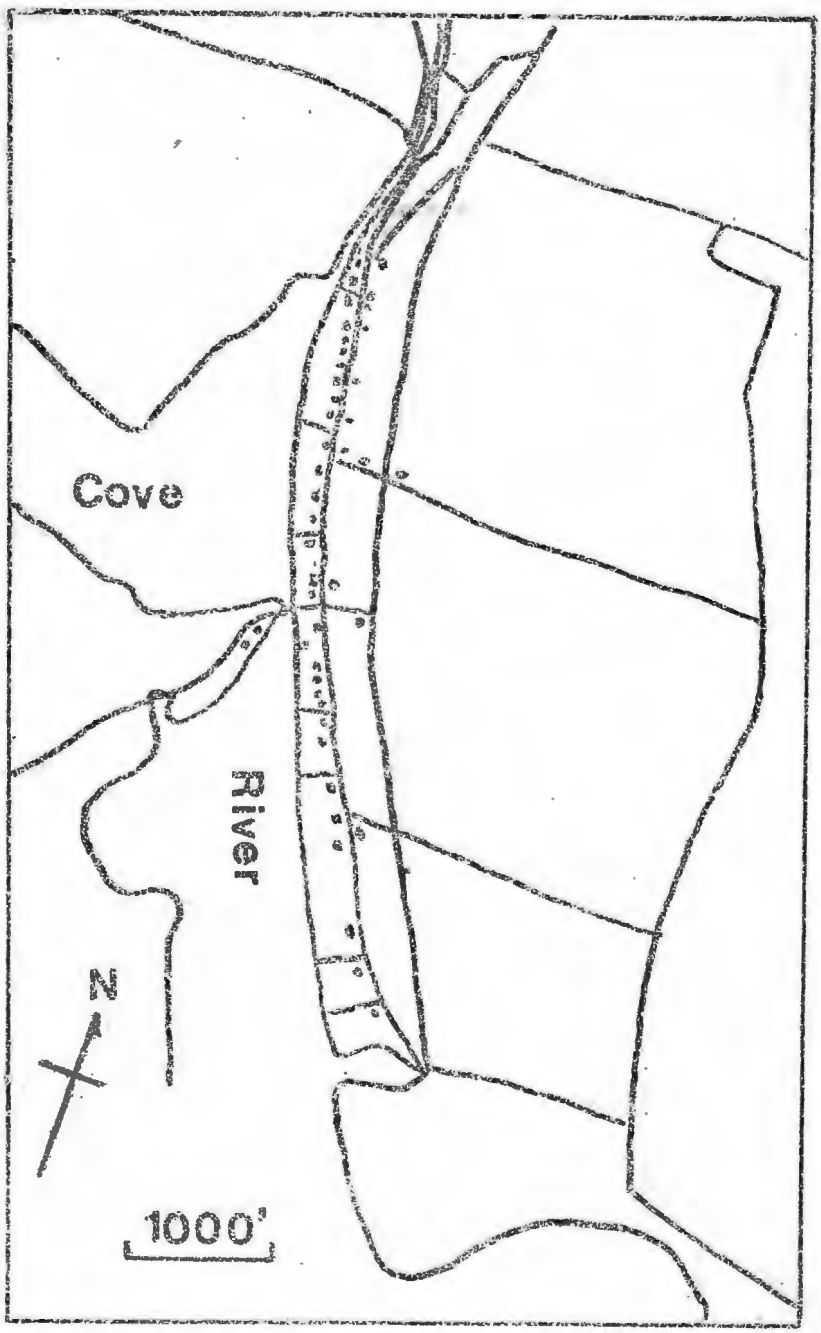
[57]Indeed in John Reps, The Making of Urban America, pp. 138-139, Providence is discussed as a good example of the linear plan.

[58]Downing, Early Homes of Rhode Island, p. 8.

[59]Cady, Development of Providence, p. 7.

PROVIDENCE

Mid - 18th Century



This map was drawn from a map by John Hutchins Cady contained in his Civic and Architectural Development of Providence, p. 56.

Massachusetts...."[60]

Newport was established in 1639 by William Coddington and approximately two hundred other former citizens of Massachusetts Bay Colony, many of them prominent socially and politically, who broke with the Portsmouth, Rhode Island, settlement to establish a profitable, commercial port. In contrast to Providence, Newport was laid out according to the 'compact, squared' plan.[61] While Newport had churches adjacent to which there was open, the commercial square was the center of the community. (See Map on page 35).

The port city's richer, busier, more cosmopolitan life:

> "was naturally reflected in architecture both public and private. Newport's seventeenth century building often showed a kinship with the more pretentious work of Massachusetts and Connecticut. Its early eighteenth century architecture reflected the influence of Sir Christopher Wren and other English baroque architects, at a time when much of Providence was still restricted and Gothic in character."[62]

Bristol, a colonial Rhode Island town with a meeting house and common, was settled in 1680 as a Massachusetts colony, and in plan, followed the precedent of other

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[60]Cady, Development of Providence, p. 7.

[61]Reps, The Making of Urban America, p. 131. Reps suggests that the layout of the "resulted from advanced planning and some degree of continental control, at least over the lines of the streets and dedicated open spaces."

[62]Downing, Early Homes of Rhode Island, p. 10.

Massachusetts towns. Lots were set aside for the meeting house (the Congregational Church), the town house, the market house, and the school house.[63] Located on the East Passage of Narragansett Bay between Providence and Newport, Rhode Island's two most important towns, Bristol was annexed to the Rhode Island colony in 1747.

Wickford, Rhode Island, was established by a proprietor as a land speculation venture.

> "...in 1700, Lodowick Updike owned land in an area with great political freedom and a great potential for economic growth. Moreover, he owned a harbor next to an agricultural area which contained no villages. He decided to lay out a new town by clearing roads and having water-front lots surveyed."[64]

Wickford's plan was probably copied from Newport. Updike "laid out a long straight street running parallel to the shoreline, north and south, with lots only on the coastal side and called it the 'Maine Street,'" This resembled Newport's Thames Street.[65] In a flat area adjacent to the "Maine Street," side streets were laid out in a grid pattern. (See map on page 37). The original plan consisted

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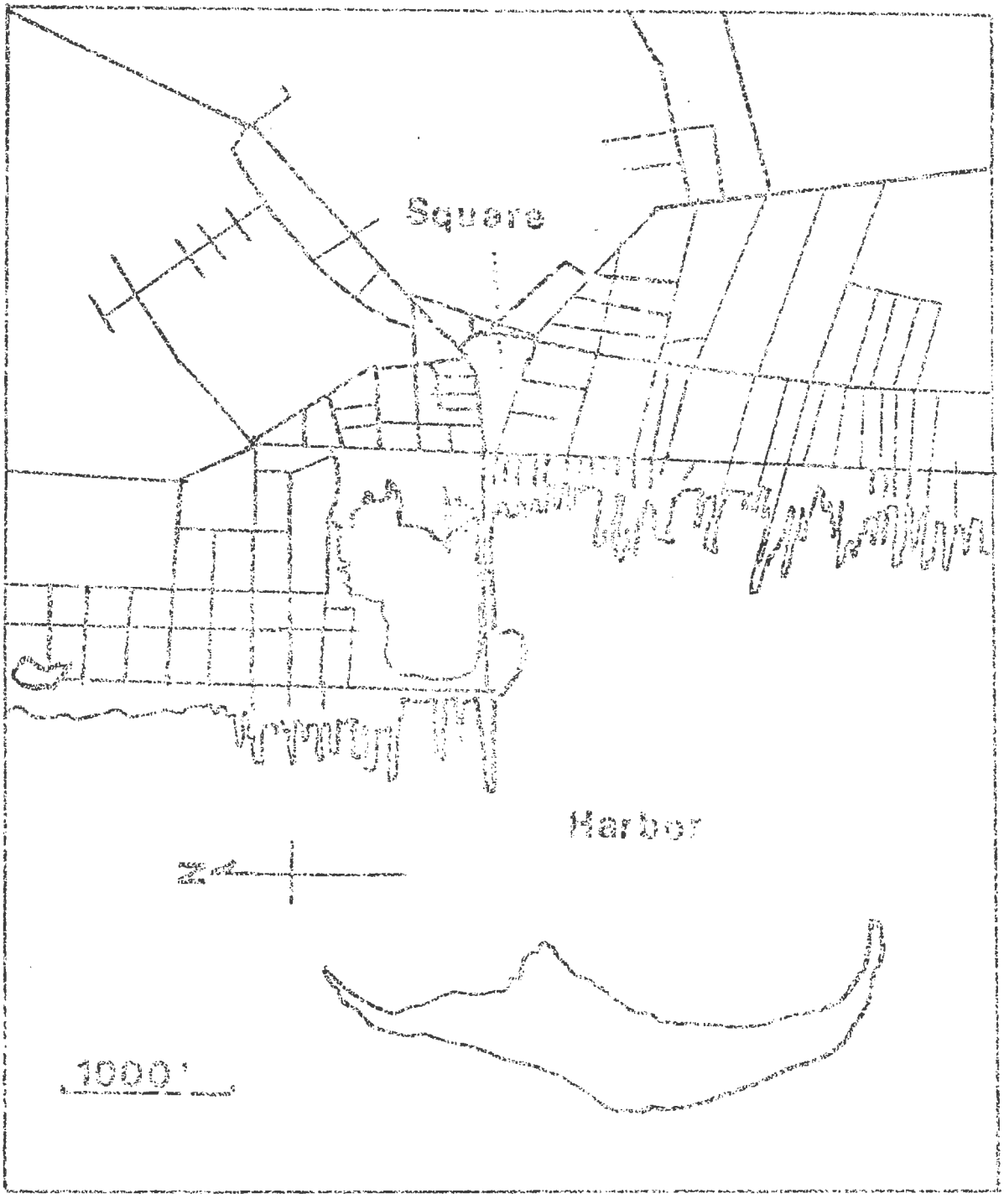
[63] Downing, Early Homes of Rhode Island, p. 57.

[64] Charles F. Zimmermann, "Design Without Specialization," 1970 (Typewritten). This paper is a study of "decisions made about architecture and planning in Wickford, Rhode Island, from 1639 to 1830."

[65] Ibid.

NEWPORT 1777

Street Pattern



This map was drawn from a map in Downing and Scully, The Architectural Heritage of Newport,R.I., p. 90.

solely of roads and surveyed lots, with no provisions for public buildings or squares.

The basic pattern of Rhode Island's colonial development was established by the early eighteenth century. Most of the state was devoted to agriculture, the pursuit of which was not highly profitable. An important seaport, Newport was the state's pre-eminent town, Providence its second most important town; there were other towns of lesser stature. During the second quarter of the eighteenth century, the colony had reached its optimum population under prevailing economic conditions and the growth rate from 1730-1755 slackened.[66] The founding of new communites abated:

> By the middle of the century the arable land of the Colony, most of which was of poor quality, had all been taken up, and the natural increase of the farm families resulted in a continuous population surplus. Yet, the commercial and industrial interests of the Colony were so prosperous at the time that Rhode Island succeeded in retaining nearly all of its natural increase during this period.[67]

Existing communities continued to grow, and Rhode Island's population between the first colonial census in 1709 and the last one in 1774 had multiplied just about eight and a

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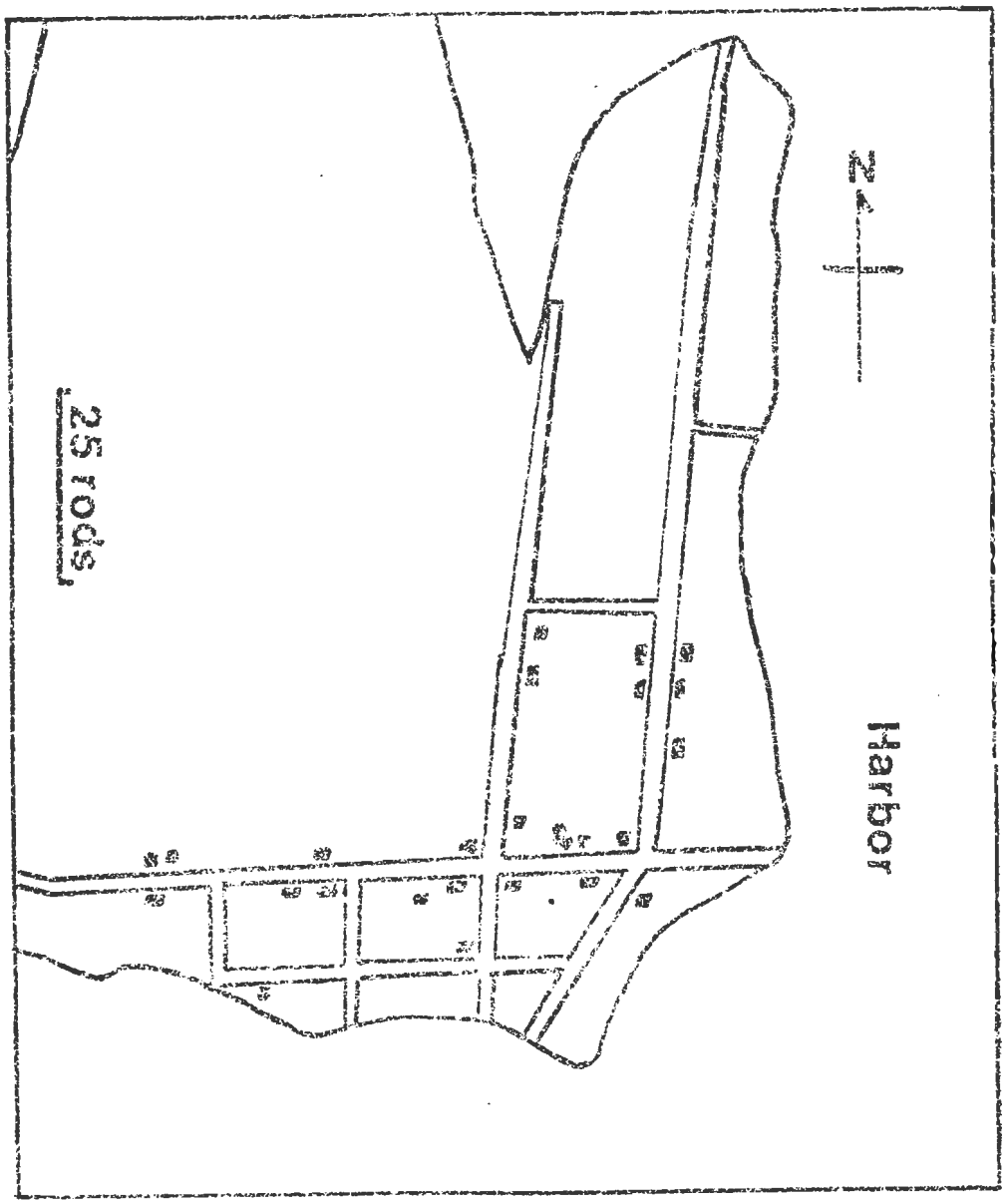
[66]Peter Coleman, The Transformation of Rhode Island 1790-1860, (Providence: Brown University Press, 1969), p. 14.

[67]Kurt B. Mayer, Economic Development and Population Growth in Rhode Island, (Providence: Brown University, 1953), p. 19.



This map was drawn from a map by Charles F. Zimmermann in the paper "Design without Specialization." The Zimmermann map appears to have been drawn from D.G. Beers' 1870 Atlas of Rhode Island.

half times, from 7,181 in 1708, to 59,678 in 1774.[68]

In Rhode Island, the transition from medieval architecture to the style that is now recognized as colonial architecture began in Newport and spread gradually throughout Rhode Island. The first dwellings in the new style:

> "adhered to the old sturdy construction, at the same time that they reflected to a limited extent the newer styles in elaboration of the cornice and doorway and in the use of stile and rail panelling and classic details on the interior."[69]

The new style matured with an "emphasis upon symnetry, regularity of plan, simplicity of outline in flat roofs and level cornices, and upon formal adornment which concealed structural elements."[70]

In part the style derived from English baroque and late Renaissance architecture and it afforded a sharp contrast to the earlier buildings which were constructed according to the medieval tradition. However, the modifications to the medieval style, the adjustments made on account of the harsher New England climate--the shingled roofs, the clapboard walls, and the fenestration pushed tight to the forward plans of the facade--were retained in colonial baroque architecture.

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[68]Mayer, Economic Development and Population Growth in Rhode Island, pp. 11, 19-20.

[69]Downing, Early Homes of Rhode Island, p. 65.

[70]Ibid., p. 94.

In the Providence area, the change from medieval to colonial architecture occurred in the first two decades of the eighteenth century. During the transition period, stone end houses were frequently constructed, but "they usually had two full stories and the chimneys were built of brick, the manufacture of which had been commenced in the colony about 1690."[71] The change in style accompanied Providence's increasing commercial prosperity and "by 1750 Providence houses had developed a sturdy style of their own."[72] Still, the public and domestic buildings of Providence were generally architecturally more conservative, smaller and simpler than those in Newport.[73]

Several factors were important in the dissemination of the new architectural style in Rhode Island: trade with other colonies and the mother country brought colonists in contact with architectural developments; some immigrants brought with them a familiarity with certain new buildings, and, after the middle of the eighteenth century, imported books on architecture were increasingly used as a source for designs.[74]

Of the architectural developments in England:

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[71]Cady, Development of Providence, p. 23.

[72]Downing, Early Homes of Rhode Island, p. 175.

[73]Ibid., p. 205.

[74]Ibid., p. 99.

> "Wren's architectural style had an especially profound influence on early eighteenth century colonial building. His work preceded by only a few years one of the first of the more pretentious New England structures, and it was natural that as colonial builders turned away from the medieval style of the earlier days, they should be influenced by the designs of the man whose new churches were still the talk of London. Wren's work was lighter in touch and more elaborate than the massive and rather severe designs of Inigo Jones. He was fond of the broken and the scroll pediments, as well as the carved consoles and exuberant ornament of the baroque manner. All these elements made their appearance in the eighteenth century buildings of the colonies. Perhaps under Flemish influence, he used brick, frequently combined with rusticated stone. This material became a favorite one in America especially for public building."[75]

A number of buildings in Rhode Island, especially in Newport, were influenced by Wren's architecture. For example, in Trinity Chruch, Newport, which was built in 1725, "certain details which differ from Christ Church (Boston) suggest that Munday (the architect) or someone associated with the building of Trinity, knew Wren's London churches at first hand."[76]

In 1740, Peter Harrison arrived in the New World and by 1745 he was in Newport. As an architect "entirely

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[75]Downing, Early Homes of Rhode Island, p. 95.

[76]Henry-Russell Hitchcock, Rhode Island Architecture, (Providence: Rhode Island University Press, 1939), p. 19.

cognizant of the architectural trends in England,"[77] Harrison introduced new stylistic strains to architecture in Rhode Island.

This does not mean, however, that his work was original:

> "Almost all the designs Harrison employed (have been traced) to the plates of architectural publications. Many of his suggestions were drawn from the books by Hoppas, Ware, Colin, Campbell, and Kent--in other words, from the works sponsored by Lord Burlington. This means that he was under the influence of the Puristic or Palladium movement set up in revolt against the Baroque style of Sir Christopher Wren, although he did occasionally draw from the designs of James Gibbs, Wren's most important follower."[78]

As with the colonial style, these academic influences arrived in Providence well after they had been felt in Newport. Joseph Brown, scion of the Providence mercantile family, brother of Nicolas, John and Moses, an amateur architect, owned:

> "...James Gibbs' Book of Architecture, which appeared in 1728, and Abraham Swan's Designs, published in 1745. The influence of these works as well as Brown's natural tendency to turn to traditional models, placed his work more definitely in the earlier colonial tradition than the Newport building of Peter Harrison, who drew his inspiration from puristic English sources."[79]

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[77]Downing, Early Homes of Rhode Island, p. 215.

[78]Ibid., p. 218.

[79]Ibid., p. 271.

The plans and elevations of Brown's first Baptist Meeting House were drawn from Gibbs' Book of Architecture.[80] The design of his College Edifice (1770), based on Nasau Hall at Princeton,

> "is an almost wholly utilitarian structure, rather plainer than its model. The four storeys of brick with segmental arched windows regularly spaced are almost wholly unembellished; but there is a central pedimented projection and string courses at the floor levels, as well as an academic wooden cornice and balustrade and even a simple lantern on the deck of the roof. Academic design could hardly be further reduced to is essentials of solid mass, sound proportions and regular rhythm."[81]

By the Revolution, colonial baroque architecture had spread throughout Rhode Island. Pretentious buildings were constructed in the prosperous towns of Newport and Providence, but even in outlying areas, individuals who achieved not only security but prosperity were inclined to display their well being when they built for themselves.

> "Most buildings of the second half of the century differed from earlier colonial work in its more competent understanding of the elements of classical design already in use. The look of naivete disappeared; proportions became more academic, and the motives derived from books were more skillfully interpreted. The increased knowledge of handling of classical detail was no

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[80] Hitchcock, Rhode Island Architecture, p. 23.

[81] Ibid., pp. 22-23.

> doubt due in large part to the fact that architectural books were by this time more readily available; housewrights and builders, as well as those who styled themselves architects, now turned for inspiration to the numerous pocketsized editions...."[82]

About colonial Rhode Island architecture, Henry Russell-Hitchcock concluded that:

> "...in summarizing the more ambitious eighteenth century colonial architecture of Rhode Island, as illustrated in the works of Munday, Harrison and Brown, it's necessary to stress its lack of continuity with earlier American work and its close, though delayed, derivation from the mother country. Munday's work is about a generation in retard from its English prototypes, Harrison's rather less, but Brown's rather more."[83]

The Revolutionary War brought an end to the colonial period of Rhode Island's history and a temporary cessation of community and architectural development. During the Revolution, the state's population declined. After the Revolution, the state's population increased rapidly, by 1790 the losses of the Revolution had been more than regained. But, during the next decade the state's population increased by only 390 persons;[84] the probable reason for this stagnation was that the farm lands of the state had long been taken up and that:

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[82]Downing, Early Homes of Rhode Island, pp. 229-233.

[83]Hitchcock, Rhode Island Architecture, p. 26.

[84]Mayer, Economic Development and Population Growth, pp. 11, 22-24.

> "while the prospering commerce and the sizeable merchant marine of the colony had been able to provide employment at home for the surplus agricultural population during the first half of the 18th century, the changing fortunes of commerce and trade could no longer absorb all the natural increase of the farm population during the later decades of the century."[85]

Under these circumstances new communitieswere not needed.

Architecture, however, continued to develop with the return of prosperity. Providence replaced Newport, which had been occupied by the British and as a consequence suffered severe decline, as the locus of growth. Providence merchants made money and spent it on houses grander than anything built in that city during the colonial period. The basic formula of the colonial baroque architecture was retained but rich ornamentation and an increased size that made possible monumental facades were added. On an architecture that "looked backward to the age that was past for more than...(it) looked forward,"[86] was applied a new "standard of ostentation which marked the emancipation of New England from the modesty enforced in the colonial period."[87]

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[85]Mayer, Economic Development and Population Growth, p. 25.

[86]Hitchcock, Rhode Island Architecture, p. 36.

[87]Wayne Andrews, Architecture, Ambition and Americans, (New York: Harpers, 1955), p. 93.

Phode Island towns possessed most of the characteristics that distinguish the colonial and Federal architecture of New England towns. Like other New England settlements, early Rhode Island towns began as nucleated villages established by proprietors, with either a linear or squared plan and with medieval dwellings. Street plans were adjusted to the topography of the site, and the architecture was modified in response to the harsher New England climate. Before the middle of the eighteenth century a new architectural form had emerged which strove for articulated simplicity, symmetry, and refinement. Knowledge of recent architectural developments in Great Britain and the Continent had been brought over by immigrants and sojourners, and as the century progressed, imported books on architecture had increasing influence on building, especially more ambitious projects. Yet, the skill of the craftsman/carpenter prevailed and continuity was maintained.

In one important respect, however, most Rhode Island towns were unlike the prototypical New England village: they were not focused on the meeting house and common. Although Rhode Island towns often had both churches and open spaces, they did not have the clarity of purpose of towns molded by Puritan theocracy.

This was the condition of community planning and architecture in Rhode Island when the first mill villages were built to accommodate the expanding textile industry.

In 1790, the firm of Almy and Brown with the technical expertise of Samuel Slater had established the first successful cotton manufactory in America using the factory system for the production of cotton yarn. During its infancy, which lasted nearly two decades, the industry grew slowly; but once out of this phase, its expansion necessitated the development of new communities in Rhode Island.

CHAPTER IV

POTENTIAL INFLUENCES ON THE COMMUNITY FORM OF EARLY RHODE ISLAND TEXTILE MILL VILLAGES

The layout and architecture of a community are the manifestation of a number of factors and conditions. As these factors and conditions change, community form tends to change. Chapter III established the form, the shape of the New England village in Rhode Island in time. The Appendix, "Factors Affecting Early Rhode Island Textile Mill Villages," is divided into three sections: "Social and Economic Condition," "The Development of the Textile Industry In New England Before the Introduction of the Factory System of Production," and "The Requirements of Factory Systems," and deals with the factors and conditions over time that could result departures in the community form of the early Rhode Island textile mill villages from the antecedent Rhode Island-New England village. This Chapter summarizes both Chapter III and the Appendix and is an attempt to assess form giving elements effecting early Rhode Island textile mill villages.

The community forms employed by a people as the framework for their activities are subject to change, as

conditions shift certain elements in an inherited generic plan receive greater emphasis while others are modified or dropped. New elements may be added. This process is apparent in the evolution of community form in New England and in Rhode Island.

Almy, Brown and Slater's successful machine spinning venture introduced the factory system of production in the United States and was important in the development of a manufacturing economy in New England. The textile industry took hold, and by the first years of the nineteenth century, it's expansion required that new communities be built to take advantage of sites where water power was available. What were the factors that had the potential of influencing the community form of the early Rhode Island textile mill villages? To what extent were inherited community forms utilized, what social and economic forces were at work, what were the requirements of the factory system of textile production on community form?

Colonial New England including Rhode Island was settled as nucleated villages with linear or compact layouts adapted to the site. The vernacular architecture was simple, clearly articulated, balanced and refined. The plans, the phenomenal union of layout and architecture, were harmonious, ordered and plain--they reflected New England society which was guided by Puritanism and were suited to the harsh New England climate and an economy that was not abundantly applied with skilled labor.

The economy and the economic organization of a people are powerful determinants of the community forms employed by the people. The New England colonies were established by joint-stock companies as commercial ventures with profit as a motive. Individual settlements were the enterprise of proprietors who knew that their communities had to be economically viable. As manufactories were undertaken it was the practice to provide for the workers even to the extent of building a community for them. Settlement and community building were economic activities, and this was manifest in the plans: practicality and usefulness were virtues while excess and exuberance were eschewed.

The economic development of New England was restricted by the policies of mercantilism and regulated by the precepts of Puritanism. England tried to protect her domestic manufactures by securing the colonial market. Colonial manufactures were proscribed and, for the most part, did not progress beyond the household system of production. Had the domestic system of production been widespread, the economic organization of New England society would have been different. The New Englander's religion was consonant with his economic activity, and a basic tenet of that religion, that a man is responsible for his actions, had a regulatory affect. Economic power carried moral obligations. Indeed, New England villages have been seen as an expression of this moral order.

When new elements are introduced into a generic plan for community development, they must either be made to conform with the existing elements of the plan or be allowed to supercede them. Some societies are flexible and tend to permit expression of new elements, other societies are more rigid and tend to force new elements into traditional modes of expression. In architecture and community planning, New Englanders were conservative and not given to innovation and change for its own sake; so unless the force for change was very strong, the familiar form of the village would probably be used in the development of a new community.

When the factory system of textile production was introduced in 1790, the production of textiles had long been a matter of public concern in New England. The availability of textiles was not long taken for granted by the colonists; in the harsh climate, good clothing was vitally important; a ready supply of indigenous fibers was lacking and imported cloth was costly. Therefore, production of textiles became a matter of public interest and action. Women and children were encouraged to spend their time spinning and weaving. This association of textile production and the public interest tended to persist.

Those who encouraged manufactures believed that their introduction would compliment and augment the existing economic order, not change it drastically. Ventures in mechanized textile production were supported by men

with a patrictic or experimental turn of mind and were conceived as being philanthropic: the supply of a needed commodity would be increased, employment opportunities for women and children, especially poor, would be provided, and the flow of money out of the country to purchase foreign textiles would be reduced.

The factory system of production had certain requirements for raw materials, energy, machinery, and labor, which had to be organized in a particular fashion. Cotton was imported from the southern states and abroad. Water power was used to meet the energy requirement--the location of suitable mill seats determined factory location. Since machinery, during the period of textile industry was not commercially produced but built for the factory by craftsmen, obtaining adequate machinery was really the labor problem of retaining craftsmen with the necessary skills. When the textile industry had expanded and the number of processes mechanized had increased, there was then sufficient demand for textile machinery that companies specializing in its production were organized.

Money was not readily available; early ventures in the textile industry were small, experimental and not heavily capitalized. The business was often a family affair, William Almy was Moses Brown's son-in-law and Smith Brown was a kinsman. When Almy, Brown and Slater's business increased, Samuel Slater sent to England for his brother John; what was more Samuel Slater's "wife's brothers

were employed by him, Smith Wilkinson spun for him, David wrought on machinery, and the whole family was engaged in some way connected with the business. He built, in company with his father-in-law, Oziel Wilkinson, the "New Mill...."[1] The limited liability corporation was not used as a form of business organization until later in the history of textile industry, and large investment came only after the early industry had proved itself.

The early textile industry required two kinds of labor, skilled mechanics to build and maintain the machinery and operatives to tend it. Skilled laborers were few. Many of the first mechanics and other textile tradesmen were, like Samuel Slater, English immigrants who had come to America for the proffered inducements and for the opportunity to be involved in the start of the industry in the country. Were the circumstances of their employment unattractive, the inducements and the opportunities might have been futile.

The second labor requirement was to secure a workforce for the factory. Overall, the country was sparsely populated and the labor force was scant. To employ able-bodied men as the labor force in the textile production was socially unacceptable. However, since women and children had traditionally been engaged in household

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[1]White, Memoir of Samuel Slater, p. 189.

manufacture, there was a readily available labor force. In family mills, proprietors often employed their wives and children, other help came from the surrounding community. As the industry expanded, the search for help was extended.

The colonial practice of providing habitation for workers was continued. Samuel Slater lodged with the Wilkinsons, and a family that was considering working for Almy, Brown and Slater in Pawtucket refused to do so unless a good house was provided them.[2] One of the concerns associated with the development of manufactures in America was that the workers would be degraded. The early proprietors of textile factories were anxious to dispel any criticism, and so they not only supplied what was needed but tried to improve the condition of their workers.

In two senses, workers were not bound to the mills: many women and children worked to augment family income, and so could leave if their situation became too unpleasant, and migration west was possible. Mill villages had to be agreeable physically and morally to attract and hold workers for the factory.[3]

Because the work day was long and transportation slow, workers had to live very near the factory. The means to obtain food was also necessary, and so "there is

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[2]Hadcock, "Labor Problems," p. 30.

[3]Ware, Early New England Cotton Manufacture, pp. 8, 12.

very generally attached to each dwelling a lot of ground, which is appropriated to the culture of garden vegetables, and food for a cow and swine: these are considered very essential comforts, and are rarely dispensed with by the industrious operatives."[4]

Although only one firm, Almy, Brown and Slater was, at first, able to spin cotton yarn with power driven machinery, and although the spread of the industry was initially slow, the interest in textile production was widespread. Many firms sprang up as the industry spread out from its birthplace in Pawtucket. When the suitable mill seats in populous areas had been exploited, new ventures had to move to less populous areas. Since providing accommodations for workers was a generally accepted practice, the establishment of mill villages was a response to the textile industry's need to expand.

The layout of three early Rhode Island textile mill villages will be examined in the next chapter. During colonial times a New England community form had developed. To what extent were early Rhode Island textile mill villages a continuation of this form, this shape in time, as it had evolved in Rhode Island? To what extent were the early Rhode Island textile mill villages a product of other factors, such as the requirements of industry?

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[4]White, Memoir of Samuel Slater, pp. 134-135.

CHAPTER V

THREE EARLY, RHODE ISLAND MILL VILLAGES

Slatersville

Their ventures in cotton manufacturing having proved successful, the firm of Almy, Brown and Slater decided to undertake major expansion. Early in 1805, Samuel and John Slater travelled the northern Rhode Island area looking for a good place to build a new mill. They selected a site in northern Smithfield (since 1871, North Smithfield) on the Branch River, a tributary of the Blackstone, and on April 22, 1805, William Almy and Obadiah Brown purchased 110 acres there from David Bufum.[1] Over the next year, more land was acquired and in May, 1806, one quarter interest in the land, "the mill privilege, saw mill, and other mills and buildings, thereon standin,"[2] was conveyed to each, Samuel and John Slater. The partnership of Almy, Brown and Slaters was formed. A mill and machinery were constructed and "July 4th, 1807, was celebrated by running

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[1] Bagnall, Textile Industries, p. 398.

[2] Ibid., p. 398.

the frames of the mill for the first time."[3]

The village of Slatersville (Map 4) was also begun in 1806. "The natural location was beautiful in the extreme. The mills were situated in an amphitheatre, with the river on one side and some acres of meadow on the other. On a plateau is the village consisting of well-built houses, many of them large and elegant."[4] Prior to the construction of the mill village, the site was relatively undeveloped--one historian has stated that the plateau on which the village is located was covered with "a dense forest" and that "the beautiful basin in which these factories are nestled was then a tangled swamp."[5]

The layout of Slatersville is responsive to the natural topography of the site. The mill houses were built on level ground, the plateau, some forty feet above the site of the lower factory. School Street (Map 5)[6] follows the contour of the bank (Photograph 1). The green is a triangular green at the east end of the village, but the houses are not arranged around it in a "squared" plan.

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[3]Richard M. Bayles, History of Providence County, Rhode Island, 2 Vol. (New York: W. W. Preston, 1891), 2:492.

[4]Thomas Steere, History of the Town of Smithfield From its Organization, in 1730-1, To its Division, in 1871, (Providence: E. L. Freeman & Co., 1881), p. 216.

[5]Bayles, Providence County, p. 488.

[6]M. S. Franklin, "Houses and Villages of North Smithfield, Rhode Island," Pencil Points 16 (August, 1935): 437.

Across the road from the mill houses and down the bank are the factories and factory sites; these follow a lower contour, roughly parallel to that of the houses and that of the river. The bridge across the river is located between the mill sites and approximately bisects the linear layout. There are a few mill houses of basic importance on the road to Millville on the hill behind the town.

James Stevens' (1831) Topographical Map of Rhode Island, shows the houses on the green, three factory buildings at the lower mill site, five houses on the road to Nasonville, one factory building on the western mill site, and seven houses on the road to Millville. This is a good indication of the extent of development in Slatersville at the end of the early period of textile industry's progress in Rhode Island. This development did not take place all at once.

The first factory and mill houses in Slatersville were built in 1806. House "1" on School Street and the houses on Green Street, except the unlettered house (Map 5) all belong to the first decade of Slatersville's development. This was a period of great success when the machinery in the factory was "increased before 1815 to five thousand one hundred and seventy spindles, the largest operated at that time in cotton manufactory in New England."[7]

The bank that was to become the First National

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[7]Bagnall, Textile Industries, p. 399.

Bank of Smithfield was incorporated in 1815, but did not open for business until 1818; John Slater was its President.[8]

Probably, little significant building took place in Slatersville during the depression in the Rhode Island textile industry which lasted from the end of the War of 1812, in 1815, until about 1820.

After 1820, there was a general recovery and a second period of growth in Slatersville. The first mill on the western site was erected in 1821[9] and mill houses were built across from it on the Nasonville side. The village hotel was built by John Slater, in 1824. It was operated by Abram Winsor.[10] In the middle of the decade, mill houses "i" and "j" (Map 5) were built on School Street near the green.[11] In the winter of 1826, the first Slatersville mill burned, and later that year the mill that now occupies the site was built.[12]

In 1838, the church on the green was built by the firm of S & J Slater (in 1833, Almy and Brown's interest in the Slatersville manufactory had been sold to the

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[8]Bayles, Providence County, pp. 489-490.

[9]Sande, "The Architecture of the Rhode Island Textile Industry," p. 7.

[10]Bayles, Providence County, p. 489.

[11]Franklin, "Houses and Villages of North Smithfield," p. 437.

[12]Sande, "The Architecture of the Rhode Island Textile Industry," p. 7.

Slaters[13] and donated for public use:

> "We, the individuals constituting the firm of S & J Slater, having built a house for Divine worship in the village of Slatersville, do hereby give and surrender the free use of said House to the Congregational Church in said village --reserving to ourselves fee simple of the premises--and we hereby authorize said Church to let the pews or slips for the purpose of supporting a minister. And we further agree to keep said house in repair and insure it at our expense.
>
> "S & J Slater
> "Slatersville,
> November 24, 1838"[14]

Before the construction of the church, the village had a meeting house for religious services. In 1807, "the charter of a lottery for building a meeting house" had been obtained from the General Assembly; the building was not ready for use, however, until late 1808 or early 1809.[15]

Most of the buildings of the early period of Slatersville's development were constructed in the Republican style of architecture, the post-Revolutionary development of colonial baroque architecture. Those few buildings, built late in the period, which incorporate elements of the Greek Revival style, are by virtue of their simplicity, proportion and refinement complimentary. The square,

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[14]Edwin A. Buck, "An Historical Discourse Delivered at the Semi-Centennial Anniversary of the Slatersville Congregational Church September 9, 1866, and a Tribute to the Memory of Madam Ruth Slater who died June 4, 1867," (Woonsocket: S. S. Foss, Book and Job Printer, 1867), p. 23.

[15]Albert Donnell, "An Historical Address Delivered at the Centennial Celebration of the Congregational Sunday School at Slatersville, R.I., September 13, 1908," (Woonsocket: Charles E. Cook, Printer, 1908), p. 13.

clapboard and shingle mill houses, harmonious in scale and style, are individual and distinctive in detail. The doorway of mill house "J" (Photograph 1), for example,

> "has lights cut in the pilasters, while a fanlight over the door completes the Palladian scheme. The decoration of this doorway is especially colloquial and interesting. A winged urn decorates the frieze section over each pilaster, and a row of Gothic-looking brackets supports the cornice, which is extremely academic in proportion."[16]

"...most of these houses were Mill tenements, containing four families each...."[17] The houses are not cramped together; their yards are ample for the operatives kitchen gardens. The 1826 factory is five stories of masonry construction with delicate fenestration and projected central tower topped with a simple cupola, and because the factory is located in "the basin" below the village it does not, by its size, dominate the other buildings.

John Slater managed the Slatersville enterprise from its beginning in 1806 until his death in 1843 and his leadership imparted certain qualities to village life:

> "Mingling with the workmen as one of their number, they partook of his zeal in their work.... He gathered around him a worthy class of laborers, many of them of a decidedly religious

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[16]Downing, Early Rhode Island Homes, p. 342.

[17]Franklin, "House and Villages of North Smithfield," p. 55.

> character, and by his regard for their interests secured their hearty cooperation."[18]

His wife, the former Ruth Bucklin of Pawtucket, from the outset shared the "care and responsibilities connected with laying the foundation of this village.... Her interests, however, were not so much in the success of their enterprise, financially, as in the social, moral and religious character of those who were here to dwell."[19]

Many of the original settlers in northern Smithfield were friends.[20] When the textile factories began operations, "a number of hands who had been employed in the Pawtucket factories were transferred to Slatersville."[21] By 1819, the villages' population was between six and eight hundred and by 1823 it was between eight and nine hundred.[22]

In his 1836, Memoir of Samuel Slater, George White described Slatersville as "large and flourishing...."

> This village (Slatersville) is of a recent date having grown up with the manufacturing business, which may be considered the parent of it. It is hard to contemplate such a village as this without the most

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[18]Buck, "An Historical Discourse," p. 7.

[19]Ibid., p. 38.

[20]Ibid., p. 11.

[21]Donnell, "An Historical Address," p. 13.

[22]Ibid., p. 23.

> pleasing sensations and reflections. What a seat of wealth, a focus of activity and a nursery of industry! What a display of mechanical ingenuity, and what a development of the importance and influence of the useful arts! What a combination and variety of operations, what diversity of employment, and what a number of distinct and curious operations are comprised in the manufacture of those fabrics requisite to supply the wants which the refinements of society occasion![23]

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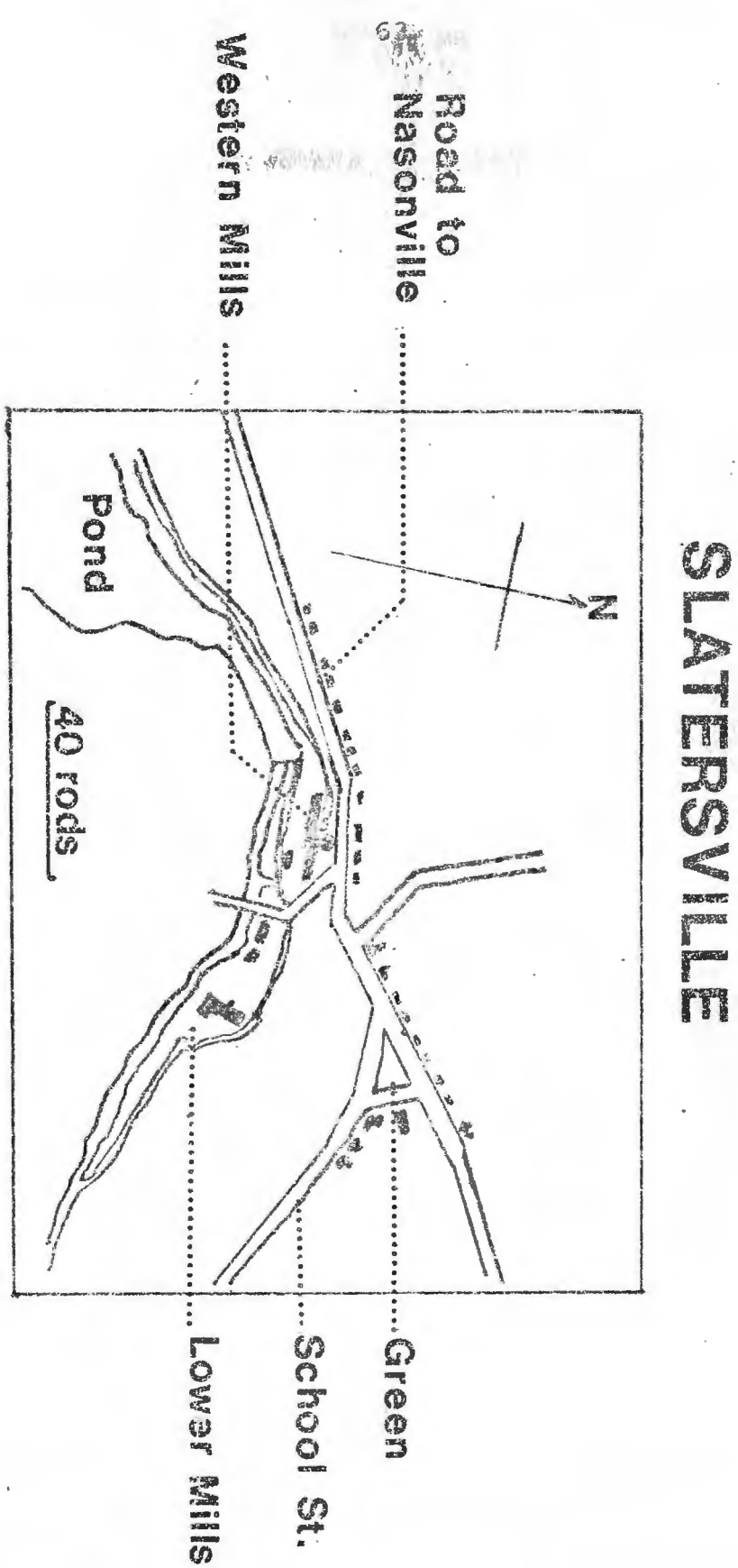
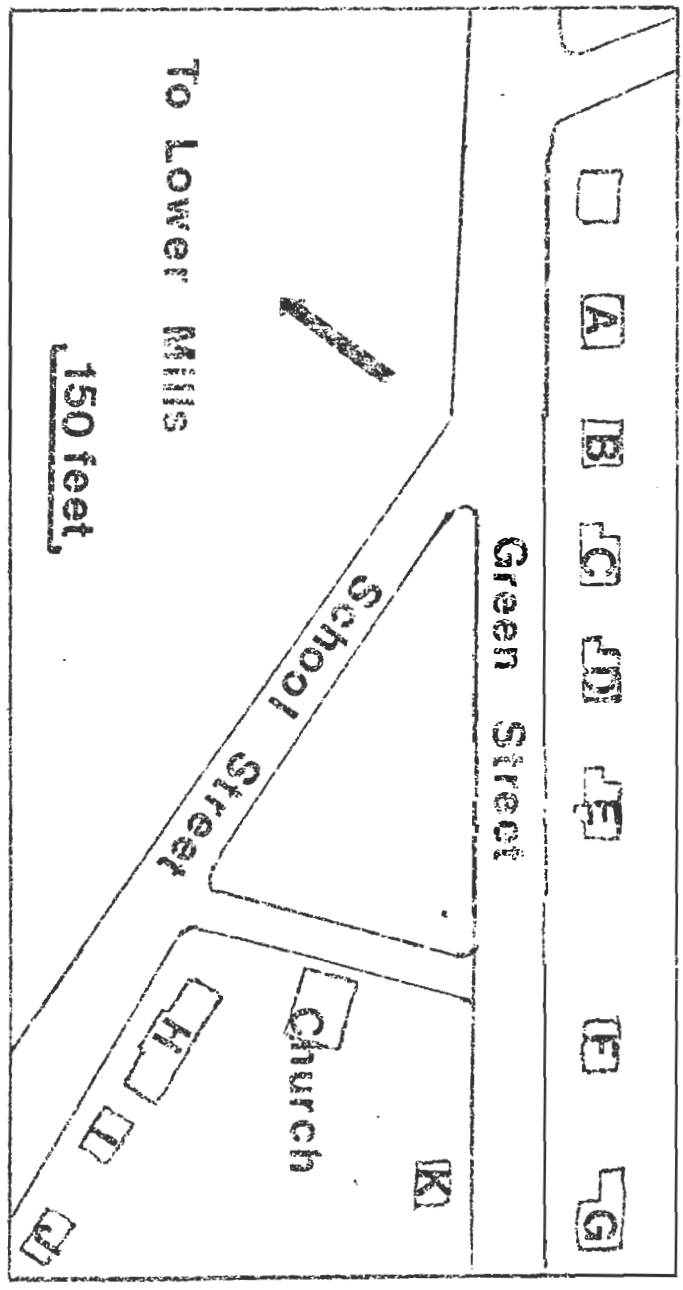
[23]White, Memoir of Samuel Slater, p. 259.



This map was drawn from D.G. Beers' 1870 Atlas of Rhode Island.



Lettered Houses Pre-1820

This map was drawn from the "Sketch: Plot Plan of Old Green at Slatersville, Rhode Island" in Pencil Points, August, 1935, page 437.

1. SLATERSVILLE - SCHOOL STREET. Approaching Slatersville from the southeast on School Street, on the left is the bank down to the lower mills, ahead are the green and the mill houses on Green Street.

2. SLATERSVILLE - GREEN STREET. Looking west across the green from the steps of the Congregational Church.

3. SLATERSVILLE - FACTORY TOWER. Looking south from the Church steps over the bank at the tower of the 1826 mill on the lower mill site.

4. SLATERSVILLE - GREEN. Looking east from the point of the triangular green at the Congregational Church and the mill houses on School Street.

5. SLATERSVILLE - ROAD TO NASONVILLE. Looking east back toward the center of Slatersville at the mill houses above the western mill site, the large buildings date from the 1850's.

6. SLATERSVILLE - WESTERN MILL SITE. Looking up from the western mill site at the mill houses on the road to Nasonville.

7. SLATERSVILLE - WESTERN MILL SITE. Looking east toward the lower mill site and the 1826 factory.

8. SLATERSVILLE - LOWER MILL SITE. Looking from the bridge at an early mill building with a trap door monitor and the 1826 factory.

9. SLATERSVILLE. - Looking from the hill on the south side of the river at the 1826 mill and church and houses on the green.

Hope

The Pawtuxet River which runs through the central Rhode Island towns of Scituate, Coventry, West Warwick and Warwick met the requirements of the Rhode Island textile industry of the early nineteenth century: the flow and the drop of the river were adequate, and it was easily dammed. The surrounding countryside was populous enough to provide the labor force.

Before the War of 1812, a number of textile manufactories were commenced. The factories and their attendant villages were so close together and the buildings so similar that they may well have been constructed by the same builders, albeit for different companies.[24] Of these Pawtuxet Valley mill villages, Hope is one of the earliest and more outstanding.[25]

After the Revolutionary War, the Brown's iron furnace at Hope had been shut down when its operation became unprofitable "on account of the gradual diminution

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[24]A. N. Fowler, "Rhode Island Mill Towns," Pencil Points, 37:M (May, 1936): 274.

[25]Hitchcock, Rhode Island Architecture, p. 39.

and final failure of the supply of iron-ore from the vicinity."[26] In 1806, a partnership of six Providence men acquired the twenty acre site, the mill privilege, and one building called the "Boaring Mill."[27]

A spinning mill was erected that "measured eighty-four feet in depth and thirty-seven in width (and was) 'three stories high in front and four in rear.'"[28] The mill had a tower

> "'in front about twelve feet square and one in the rear of about five feet square.' The first two stories (of the building) were of stone and the others of wood. In addition to the machinery (about six hundred spindles and carding and roving machines), the building housed a company store where yarn was sold retail and where the employees obtained their food, clothing and other necessities."[29]

Other buildings constructed were a workshop, three small frame houses, a one story cottage and a larger house. The old Boaring Mill was divided into "a weaving house, grist mill and dwellings."[30] Fire insurance policies for the premises "indicate an expenditure of about twenty-three thousand dollars for buildings and machinery; then the cost

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[26]Bagnall, Textile Industries, p. 442.

[27]Herbert T. Leyland, "Early Years of the Hope Cotton Manufacturing Company," Rhode Island History, 25, (January, 1966): 25.

[28]Ibid., p. 26.

[29]Ibid., pp. 26-27.

[30]Leyland, "Hope Manufacturing Company," p. 27.

of the land, buildings and equipment totaled about thirty thousand dollars."[31]

Production started in 1807, in the late summer or the early fall.[32] The operations of the Hope manufactory were "doubtless characterized, as were those of similar concerns...by some seven or eight years after 1808, of propserity and large profits, and then nearly the same period of depression."[33] During this period of prosperity, operations were expanded, the capacity of the machinery was roughly doubled in 1809,[34] a new workshop was constructed in 1810, and there was further expansion in 1812.[35] With the growth the firm needed additional employees to operate the machinery and an advertisement was placed in the Providence Gazette of July 14, 1810:

> " FAMILIES WANTED
>
> Three or four families with children will meet with constant employment and good wages at the HOPE COTTON FACTORY in Scituate. Also wanted a good MULE SPINNER, or a young man to learn to spin upon a Mule. Apply at the said Factory, or of the Subscriber, in Providence.
>
> July 7, 1810 THOMAS S. WEBB, Agent"[36]

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[31]Leyland, "Hope Manufacturing Company," p. 27.

[32]Bagnall, Textile Industries, p. 443.

[33]Ibid., p. 443.

[34]Leyland, "Hope Manufacturing Company," p. 29.

[35]Ibid., p. 31.

[36]Ibid., p. 30.

The firm managed to survive the post-war depression but "lost all but eight thousand dollars of the eighty-five thousand dollars that constituted its capital in 1814."[37] Shares in the venture were sold occasionally and usually for very low prices.[38] In 1821, Ephriam Talbot of Providence owned eight-fifteenths interest in the Company, and, in 1825, he increased his share to eleven-fifteenths; the remaining four-fifteenths were owned by John Whipple, a prominent Providence lawyer.[39] In 1844, most of the original mill buildings burned, and the property was sold as it was to the firm of Brown & Ives which built new mills and from time to time enlarged the operation.[40]

From the hills of western Rhode Island, the Pawtuxet River twists east to Narragansett Bay; at Hope (Map 6) the river bends in a "U" around a hill. The mill seat is located in a flat area on the east side of the hill near the river. A road, the principal street of the village, runs north uphill from the mill seat, rising about twenty feet and then follows the contour of the hill. Other streets run roughly parallel to the principal street on higher and lower contours of the hill. On the west side of the hill, the river is dammed to form a reservoir

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[37]Leyland, "Hope Cotton Manufacturing Company," pp. 31-32.

[38]Ibid., p. 32.

[39]Bagnall, Textile Industries, p. 443.

[40]Ibid., p. 443.

Between the reservoir and the mill seat, the principal street crosses the river.

During the early period of the textile manufactory's development at Hope, the principal street was the only road in the village, and the mill houses were built along it for a distance of one-eighth of a mile starting near the mills. The first mill houses were small cottages[41] on the east or downhill side of the street and larger tenements on the west or uphill side. The cottages from the street were one-story with three windows and a brick-end chimney on the right and a door on the left. The gable roof was broken by a trap door monitor which provided light to the sleeping loft in the attic. On the downhill side the stone basement was exposed, had a door and windows and thus formed a lower story. The tenements (Photograph 10) on the west or uphill side of the street were two stories facing the street with a central chimney and doorway and a symmetrical arrangement of windows. Some of the tenements were built into the hill and thus were only one story above ground in the rear; outside stairs to the rear gave the upstairs apartment a private entrance. Later in the early period of Hope's development, additional cottages were built further back from the mills along the

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[41]The description of the earliest houses is based on photograph in Fowler, "Rhode Island Mill Towns," pp. 282-284, and in Joseph McCarthy, "Rhode Island Mills and Mill Villages," (Photographs taken from the Works Projects Administration, Providence, 1940, The collection is kept at the Providence Public Library), photograph 1-14.

principal street. These cottages (Photographs 10 & 12) were probably built in 1810 and 1815, and were larger than the cottages built a few years before and had center chimneys and a more symmetrical arrangement.

The materials of the cottages and tenements were clapboard siding, shingled roofs, masonry foundations and retaining walls, and large brick chimneys. The sliding sash windows of nine or twelve panes, the doorways, and the cornices had simple but delicate moldings. The roofs were gabled. The set-back from the street was practically uniform and a simple picket fence ran unbroken except for gates in front of both the cottages and the tenements.[42]

From the houses, the mills were downhill and around a slight bend in the road. One group of the early mill buildings has survived (Photograph 16). In the 1850's multi-family mill houses were built in the flat area directly behind the factory built in 1844 (Photograph 15), and in the 1870's more houses were built along this street (Photograph 14).

Steven's 1831 map of Rhode Island, indicated the mill and six houses on the west side of the street; Walling's 1855 map showed eleven houses on the west side of the street, eight houses in the east side, and three houses but no street behind the 1844 mill.

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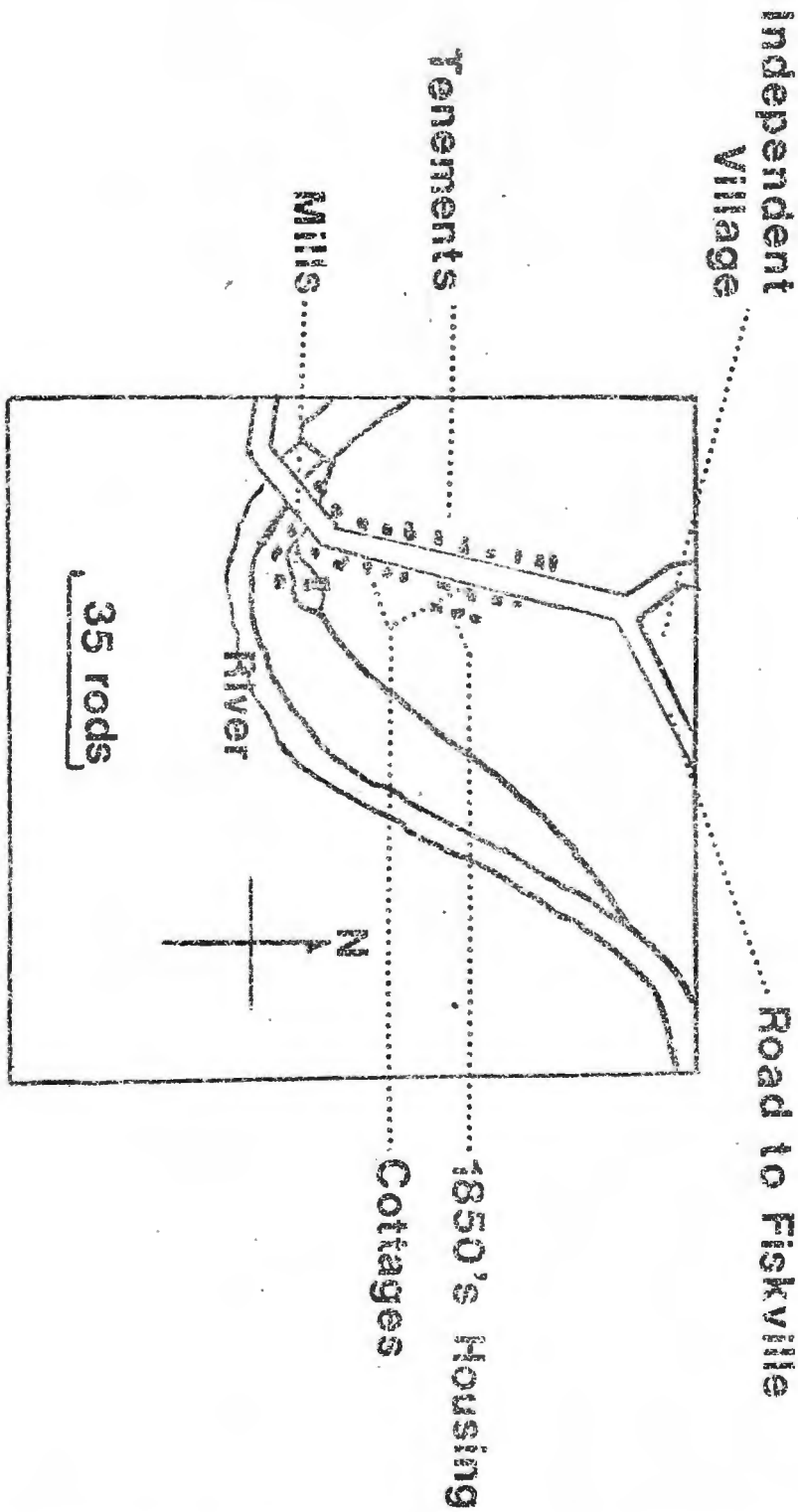
[42]Fowler, "Rhode Island Mill Towns," pp. 282-85.

Early Hope was built along the single street; the houses were regularly spaced, not crowded. In form, the houses were not poured from a single mold but were varied: end-chimney cottages, square, two-story tenements, and center-chimney cottages. Their materials and detailing, however, were consistent, simple, yet refined. The village site was used optimally: the mill was downhill and around a slight bend from the houses and so did not overshadow them; the mill houses provided both private entry to the tenements on the uphill side of the street and a lower story for the cottages on the downhill side, and the hillside location provided a view that relieved the sense of confinement often experienced in built-up areas.



This map was drawn D.G. Beers' 1870 Atlas of Rhode Island.

10. HOPE - MILL COTTAGES. Looking south toward the mill site, the cottages on the east, downhill, side of the street.

11. HOPE - MILL TENEMENTS. Looking south toward the mill site, the tenements on the west, uphill, side of the street.

12. HOPE - MILL COTTAGE, CLOSE UP.

13. HOPE - MILL TENEMENT, CLOSE UP.

14. HOPE - 1870 MILL HOUSES. Looking south toward the mill site along the street downhill from the main street on which the early cottages and tenements are located.

15. HOPE - 1850's MILL HOUSES. Looking south further down the lower street, 1870 mill house in the foreground, 1844 mill with additions in the background.

16. HOPE - OLD MILL BUILDINGS. To the right of the buildings is the Pawtuxet River.

Georgiaville

Before the Civil War, a number of textile manufactories were established in Smithfield, North Providence and Providence on the Woonasquacuket River, and of these, Georgiaville is among the earliest and most interesting --it was "one of the pioneer mills of Rhode Island."[43] The first factory there, known variously as the Georgia Cotton Manufacturing Company mill, the Nightingale Mill, and the Old Belfry Mill, was the first large stone factory in Rhode Island.[44]

Located in Smithfield, a town which was agriculturally productive and to this day is known for its apples, Georgiaville "owes its origin and name to the construction of a cotton mill...by the 'Georgia Cotton Manufacturing Company,' in the year 1813."[45] The principals of the company were Samuel Nightingale, its Providence agent, Samuel G. Arnold, its local Manager, and Thomas

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[43]Bayles, Providence County, p. 216.

[44]Pierson, "Industrial Architecture," p. 63.

[45]Steere, History of Smithfield, p. 132.

Thompson.

Their factory was a stone building 80' by 36', three stories high with an attic. Its masonry was rough; the eaves and the gables were not adorned with moldings; the windows were irregularly spaced and unequal in size, and except for its curved roof and entablature, the belfry was crude.[46] The factory took advantage of a fall of 18 feet in the river and contained one thousand spindles.[47] There is an explanation for its crudity:

> "The War of 1812 gave an enormous impetus to the cotton industry. Existing mills found themselves swamped with orders and making tremendous profits. This was especially true of those who had bought cotton just before the war and had an adequate supply. The lure of easy gains '...drew countless investors into the field and stimulated such a rush of mill building that masons and mechanics could not be found.' The Nightingale factory was built in this period and it is my belief that its somewhat disorganized character and the mediocrity of craftsmanship in its construction are in part explained by the '...unusual hastiness and inefficiency of war ventures and the scarcity of men who were fitted to construct and equip mills.' Nevertheless this youthful factory has a robust strength that commands attention. It is archaic and groping but, like the first crude experiments with vaulting in medieval France, it seems to be seeking a new form of expression."[48]

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[46]Pierson, "Industrial Architecture," p. 63.

[47]Steere, History of Smithfield, p. 132.

[48]Pierson, "Industrial Architecture," pp. 63-64.

The early mill cottages, (Photographs 17, 18, 19) also built of rough stone, have much the same character. These cottages were "grouped in little courts" in what was then "a very un-American way,"[49] and were likely built for English operatives,[50] whose presence in Rhode Island was widespread at the time of the War of 1812.[51]

The Georgiaville Company survived the post-war depression and in 1822, after losing 47½ days of work because of drought, was among the companies along the Woonasquatucket that petitioned the Rhode Island General Assembly for an act of incorporation "for the special purpose of constructing reservoirs for the supply of the Mills in seasons of drought." This was the first such act in New England.[52] The reservoirs covered 200 acres and had an average depth of eight feet.[53]

In 1828, a second factory was built; also in stone and measuring 80 by 40 feet and three stories high, its architecture was Greek Revival and "of tremendous strength."[54] With this expansion in factory capacity additional mill houses were also built, some of which

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[49]Hitchcock, Rhode Island Architecture, p. 41.

[50]Ibid., p. 41.

[51]See page , note 21.

[52]Steere, History of Smithfield, p. 133.

[53]White, Memoir of Samuel Slater, p. 260.

[54]Chase, "Rhode Island Textile Mills," p. 60.

(Photographs 20, 21) were stone.

A third mill was built in 1846,[55] also of stone and in the Greek style, with "...pedimented central projections and corner pilasters and two iron blocks, the (mill) has something of the grandeur of a baroque palace and the solemnity of Greek Revival public buildings...."[56] Similar in many respects to the Greek Revival buildings designed by the Providence architect, James Bucklin, the mill may be reasonably attributed to him.[57] Two, three-story stuccoed boarding houses were built with the third mill. Both Greek Revival in style, one "has corner piers only, the other, piers separating all the window bays; they also have round headed windows in the pediments." Their two boardinghouses differed substantially in style and scale from the earlier tenements.

Georgiaville is located in a valley which is traversed by a street which runs east-west connecting the Farnum Pike to the road to Stillwater. Stevens 1831 map indicates three houses on the south side of the street and five houses on the north side. The mill is just below the houses on the south side of the street. Walling's 1855 map shows the 1846 mill, the Greek Revival boarding houses, and the Greek Revival church which has been found praise-

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[55]Bayles, Providence County, p. 216.

[56]Hitchcock, Rhode Island Architecture, p. 42.

[57]Ibid., p. 42.

worthy.[58] This development, owned by the company, was located on a relatively level area of the valley; to the north of it was the reservoir, to the east the river and a steep hill, and to the west a steep hill along the side of which was the Farnum Pike. The rest of the buildings in Georgiaville were on the hillsides. Notably, the stone-mill houses of Georgiaville were oriented toward each other and not toward the street: the early cottages (Photographs 17, 18, 19) were grouped around a court and the later tenements (Photograph 20) were placed sideways to the street. The mills were not on the same street as the houses but behind and at a slightly lower elevation.

In 1853, the Georgiaville enterprise was sold to Zachariah Allen.

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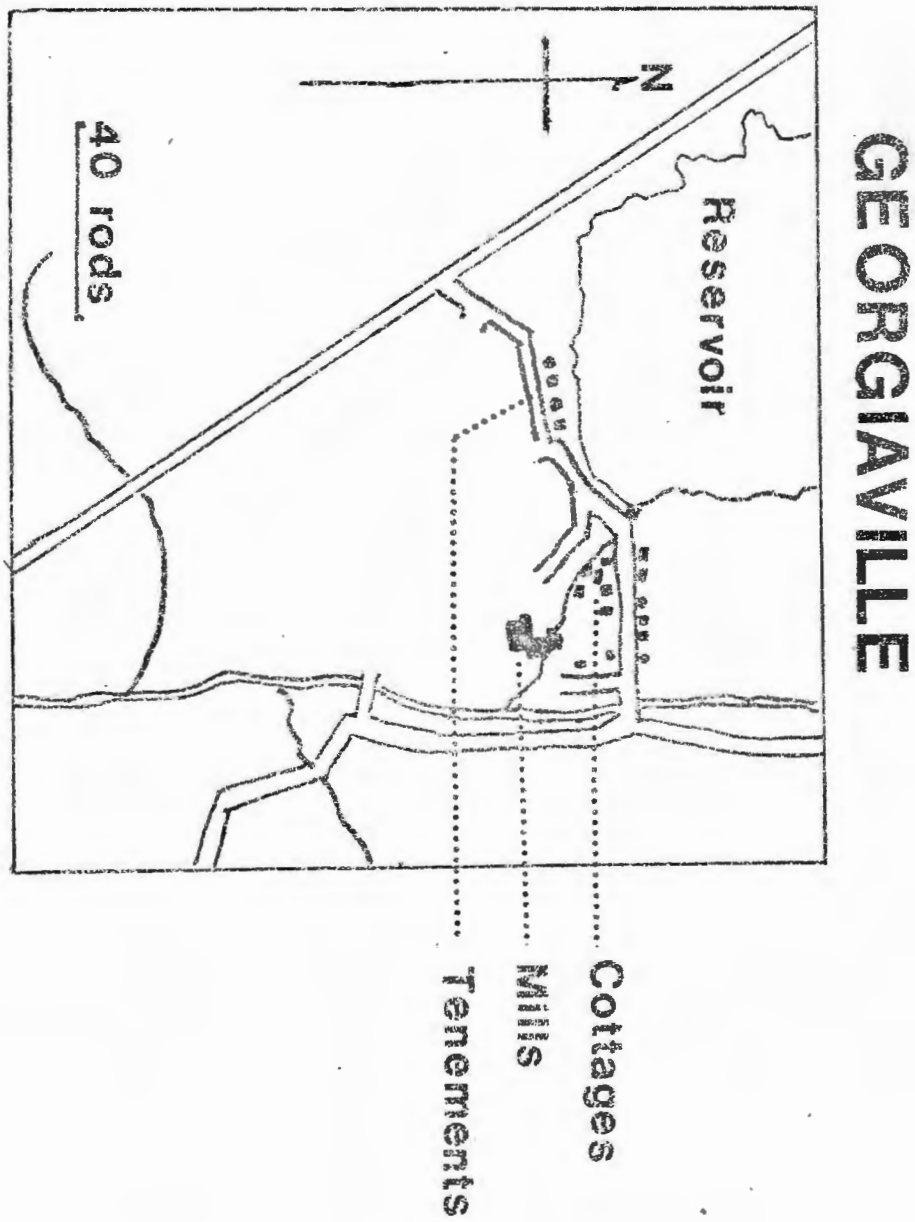
[58] Hitchcock, Rhode Island Architecture, p. 41.



- This map was drawn from D.G. Beers' 1870 Atlas of Rhode Island.

17. GEORGIAVILLE - STONE COTTAGES ON COURTYARD. Looking east at the first cottage, the mill seat is to the southeast.

18. GEORGIAVILLE - STONE COTTAGES ON COURTYARD. Looking southeast into the courtyard.

19. GEORGIAVILLE - STONE COTTAGES ON COURTYARD. Looking southwest into the courtyard.

20. GEORGIAVILLE - STONE TENEMENTS. Looking east toward the mill site and the cottages on the courtyard.

21. GEORGIAVILLE - STONE TENEMENT. Looking south at the stone tenement on the eastern edge of the mill site acress the street from which is the river, in the background is the 1853 mill with additions.

CHAPTER VI

THE COMMUNITY FORM OF EARLY RHODE ISLAND TEXTILE MILL VILLAGES

Between 1790 and 1830, the Rhode Island textile industry progressed from a small factory in Pawtucket to concentrations of mills in urban areas where there was adequate water power and to small villages scattered throughout rural areas. These villages were built as part of textile manufacturing ventures, and their form was a response to traditional building practices, to economic and social conditions and to the requirements of the factory system of production.

Slatersville was among the very first Rhode Island textile mill villages. In 1806, the factory was constructed on the Branch River and houses for workers were built along a road above the river valley. Another phase of construction began in 1821; on an upstream site, another factory was constructed and houses were built uphill from it along a road. In both the early and the second phase, the layout of development was essentially linear--houses were built along a single street uphill from the factories. The houses were square, two stories with a gable roof and clapboard siding; architectually, they had the appearance

of substantial colonial baroque or Republican farm houses. There was a generosity to Slatersville's plans: the tenement houses were commodious and amply spaced with enough room for the operatives' kitchen gardens. Although there was a green, it was not the central element in the village plan. The factories down in the valley were built in a simple but refined architecture.

Hope village was started in 1807, less than a year after Slatersville, but on a much smaller scale. During the early period, the Hope factory probably never exceeded one fifth the capacity of the Slatersville factories. Early Hope was but a hamlet, a few houses on either side of a street leading down to the factory; the modest plan made no provision for a church on a green. The houses were small cottages and modest two-story tenements. The linear layout made excellent use of the hillside site and the simple houses were the work of competent craftsmen.

Georgiaville was built in 1813 in an effort to take advantage of the wartime boom in textile manufactures. The early houses for the operatives were crude stone cottages, built around a small courtyard above the factory on a street that traversed the valley. In 1828, there was a major expansion in the operations, a stone factory was constructed in the Greek Revival style and the housing stock was increased by the erection of two-story stone tenements. The

buildings of Georgiaville were close together but the lay-out was not linear, and the houses were oriented toward each other and not the street.

In the plans, these three villages are fundamentally similar. They were laid out as nucleated villages. The houses were built uphill from the factories where they were not overshadowed and were less subject to flooding. A church on a common was not a central feature of their plans. The buildings of the villages were simple but varied.

Thus, with the exception of the introduction of the factory into the plan, there was little departure from traditional Rhode Island community building practices. The conservative tendency of society was reinforced by the desire to check the bias against manufactures. The need for change was slight. The traditional nucleated, Rhode Island village was suited to the needs of the early textile industry: the houses were close together and near the factory. Traditional building techniques were simple and economical because labor had always been dear. The requirements of assembling a labor force for the factories meant that the villages had to be attractive to prospective workers, and this attractiveness had to be maintained to protect the reputation of the fledgling industry. Paternalism was socially accepted and to be expected in family ventures--a mill owner might well have been constructing a

house for a cousin and his children who worked in the factory. What was more, the production of textiles had traditionally been a matter of public interest and the early ventures in the factory system of production were motivated, in part, by this public spirit.

However,

> "Unlike the farming villages in New England, which had tended to evolve slowly over the previous century or more, these manufacturing communities came into being almost at once. Where only a farmhouse and perhaps a saw or grist mill had been before, dwellings were needed immediately when a woolen or cotton mill was readied for operation."[1]

But, like the earlier settlements, the mill villages were intended to be communities in a good society; the mill proprietors understood "that the welfare of the operatives (was) a necessary consideration in the success of the mill."[2]

Summarizing the situation throughout New England, it has been noted that:

> "The years between 1793 and 1835 were a period of genesis for the American factory. It was a period which witnessed the establishment of a basic technology--of methods of production and the application of power. As a result of that technology the factory had evolved. It was a period which saw the first primitive efforts at large scale industrial organization and group

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[1]Richard M. Candee, "The Early New England Textile Village in Art," Antiques (December, 1970): 910.

[2]Meserve, "Founding and Growth," p. 75.

> planning. Most of this took place entirely within the framework of the American building tradition. There were no marked digressions from the prevailing architectural ideas, nor were there any attempts to explore new methods of construction. The result was an architecture which, although advanced in many respects of its technical and social provisions, was essentially conservative in form and technique."[3]

The factories and the mill houses "were constructed in accordance with the best experience of the time."[4] The layout of the villages was not the work of a professional planner or architect: "Occasionally company records or local histories suggest that a mill owner or his agent was the designer of a factory. More often these same sources name a mason, millwright or builder and imply that most decisions were left to their craft training."[5]

The mill villages benefited by being built by craftsmen working within a tradition; the more deliberate hand of architecture exagerated "the tendency to extraneous ornamentation"[6] and was soon "swept along on the flood of classic, Gothic and Renaissance revivals which culminated ecclecticism."[7]

The early, Rhode Island textile mill village was

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[3]Pierson, "Industrial Architecture," p. 170.

[4]Meserve, "Founding and Growth," p. 73.

[5]Richard M. Candee, "The Architects of Early New Hampshire Mill Towns," Journal of the Society of Architectural Historians 30 (May, 1971): 155.

[6]Hitchcock, Rhode Island Architecture, p. 28.

[7]John A. Kouwenhoven, Made in America, Arts in

an extension of the prototypical New England village as it had developed in Rhode Island. The introduction of the factory system of production has "not upset an old industrial order" and so did not the social conditions familiar in other countries.[8] Thus the early proprietors were able to undertake their ventures with a worldly idealism akin to that expressed in the establishment of the new nation. In 1835, reflecting on the "progress of manufactures," George White wrote:

> "A strict, though mild and paternal scrutiny of the conduct of the workpeople was maintained; and prudent and effectual regulations against disorderly and immoral behaviors secured the peace, harmony, and quiet of the mill companies. The introduction of manufacturing was thus, in every place, a harbinger of moral and intellectual improvement, to the inhabitants of the vicinage, and the numerous operatives from remote and secluded parts of the country, attracted to the manufacturing villages by the employment comforts and conveniences which they afforded."[9]

About early Rhode Island textile mill villages, John Coolidge observed:

> "...the settlements were neither visionary nor strikingly novel. So far from representing a radical

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Modern Civilization, (Newton Centre, Mass.: Charles T. Branford Co., 1957), p. 53.

[8]Ware, Early New England Cotton Manufacture, p. 13.

[9]White, Memoir of Samuel Slater, p. 108.

> new departure, they are strongly traditional--not to say conservative--architecturally, and as a social conception they indicate an obvious extension of the recognized scheme of things, rather than the first step in the creation of a new order."[10]

This observation has the appearance of being correct because traditional community building practices were able to accommodate the then modest requirements of the fledgling textile industry. Social and economic conditions had not far departed from those that animated community form during the colonial period.

Yet considered from the vintage point of the present, when the history of one hundred-seventy years of the New England textile industry can be surveyed, these quaint villages are clearly a step in a profound change in Rhode Island's development. How early Rhode Island textile villages were such a step is revealed in the subsequent progress of the textile industry. Two paths may be followed, one in Rhode Island and the other in Massachusetts; for at least as early as 1840, two distinct forms of textile manufacturing, each with its special regional character, were recognized.[11] Certain regional differences persisted well into the twentieth century.[12]

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[10]Coolidge, "Low Cost Housing," pp. 8-9.

[11]Montgomery, Cotton Manufacture, p. 14.

[12]Burgy, New England Cotton Textile Industry, pp. 27-28.

In Rhode Island, new generations of investors, managers, mechanics, and operatives would become involved in the conduct of the industry. The initial prejudice against manufacturing would be overcome, and Puritan ethics and scruples, the source of the "stern but benevolent paternalism"[13] that guided the builders of the early villages, would be superceded by the stiff propriety and righteousness of Victorian New England. How did these changes affect textile mill villages?

Architecturally, Sande has traced the changes in mill design through the Civil War[14] and McCarthy's photographs give an idea of the styles applied to mill housing.[15] In later mill villages it is possible to observe something of the "disastrous separation between architecture and engineering"[16] and "nineteenth century city planning (in which) the engineer was the willing servant of the land monopolist, and he provided the frame for the architect...."[17] By the time the Civil War has ended and industrial society was established in Rhode Island, new development in textile mill villages seems to have become the somewhat rigid repetition of a successful basic plan.[18]

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[13]Hadcock, "Labor Problems," p. 36.

[14]Sande, "The Architecture of the Rhode Island Textile Industry," passim.

[15]McCarthy, "Rhode Island Mills and Mill Villages," numbered photographs.

[16]Kouwenhoven, Made in America, p. 54.

[17]Mumford, Sticks and Stones, p. 36.

[18]Green, "Rhode Island Mills and Mill Villages," p. 30.

While the technology for turning cotton fiber into cloth by machines was almost completely developed by 1830, and during the rest of the nineteenth century would remain substantially unchanged,[19] major strides were made in factory building which made possible larger scale operations. The size of early factories had been limited by the efficiency of power generation and transfer, the introduction of metal shafting in the 1830's and the turbine wheel in 1843 allowed the construction of factories with larger dimensions.[20] Cast iron support columns appeared about 1850,[21] and flat roofs with bituminous coatings around 1860.[22] After 1860, the steam engine, which Samuel Slater had used to power a factory in 1827, gained ascendance as the source of power to drive textile machinery and with:

> "...the mad scramble for profit led to concentration of industry in those areas where the greatest economic advantages could be gained. Logical planning gave way to expedient adjustment: the ordered village became the 'insensate industrial town.'"[23]

In part the design of early Rhode Island textile mill villages was a product of the first millowners' efforts to attract operatives to work in their ventures and to secure

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[19]McGouldrick, New England Textiles, pp. 12, 18.

[20]Pierson, "Industrial Architecture," p. 135.

[21]Condit, American Building Art, p. 19.

[22]Sande, "The Architecture of the Rhode Island Textile Industry," p. 213.

[23]Pierson, "Industrial Architecture," p. vii.

the respect of the larger community. Around 1850, immigrants began to enter mill work in large numbers; this was "a class of labor which had no standing in the community"[24] and was "scornfully regarded as inferior by native Yankees ...."[25] One of the reasons for maintaining the standards of the villages had been removed.

Another way to gaining a fuller appreciation of the community form of early Rhode Island mill villages is to compare Rhode Island mill village development with Massachusetts textile communities developed according to the Waltham-Lowell system. Francis Cabot Lowell introduced the power loom, "an instrument which changed the whole character of the manufacture," to America and "adopted an entirely new arrangement, in order to save labor, in passing one process to another."[26] Lowell is "unquestionably entitled to the credit of being the first person who arranged all the processes for the conversion of cotton into cloth, within the wall of the same building."[27] Although Slatersville, the first large Rhode Island textile mill and the first with a village was built about 1805, and the Merrimack Manufacturing Companies' mills in Lowell date from about 1820, the former is generally considered a

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[24]Ware, Early New England Cotton Manufacture, p. 234.

[25]Reps, Making of Urban America, p. 420.

[26]Nathan Appleton, "Introduction of the Power Loom and Origin of Lowell," (Lowell, Mass.: B. H. Penhallow, 1858), p. 14.

[27]Ibid., p. 14.

product of 18th century thinking using an English factory system and the latter a product of 19th century thinking using an American factory system.[28] Slatersville and Lowell are exemplar of the two courses of New England textile mill village and town development, later villages followed one or other basic pattern, but all were built about in the same era and within the New England architecture and planning tradition. Comparison of the two provides a rich opportunity to study the impact of technology and manufacturing organization on community form.

Lowell was conceived on a larger scale than Slatersville.[29] Lowell's Waltham system of production required more capital[30] and greater water power.[31]

While Rhode Island mills employed families who lived in cottages and tenements, the Waltham system mills employed female operatives, the daughters of Yankee farmers, who lived in boarding houses. Thus dwelling units, which are a basic element in any community's plan, differed substantially between the two types of mill development

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[28]Coolidge, Mill and Mansion, pp. 17-27; Pierson, Industrial Architecture, pp. 69-70; and Ware, Early New England Cotton Manufacture, p. 60.

[29]Appleton, Origin of Lowell, p. 15.

[30]Ware, Early New England Cotton Manufacture, p. 123.

[31]Burgy, New England Cotton Textile Industry, p. 27.

In 1840, when the New England textile industry was still young, James Montgomery noted that "Rhode Island machinery also varies considerably from that of the Lowell or Eastern district."[32] The most obvious difference was that Waltham-Lowell mills used the power loom developed by Francis Cabot Lowell and Rhode Island mills used the power loom developed by Richard Gilmore. Beyond this, the cards employed in Massachusetts were also wider than those generally employed in Rhode Island.[33] The drawing frames in the two regions were of different design--to Montgomery this was significant because the stability of the labor force in England and its resultant superior skill acquired through experience allowed English mills to use drawing frames that were not so simple as those used in American mills.[34] Waltham-Lowell mills did throstle spinning to produce relatively coarse yarns while Rhode Island did mule spinning and had the capability of producing finer yarns.[35]

There is a relationship between the type of machinery used in textile production and the character of the labor force employed in the mill. Rhode Island and Waltham-Lowell mills differed both in their labor forces and machinery. Rhode Island mills employed families and relied heavily on child labor.

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[32]Montgomery, Cotton Manufacture, p. 15.

[33]Ibid., pp. 31-32.

[34]Ibid., p. 51.

[35]Ibid., p. 69.

Waltham-Lowell mills employed female operatives, the unmarried daughters of Yankee farmers. To what extent the work force determined the machinery used in a mill and to what extent the machinery determined the type of work force employed is unclear--yet a mill that had machinery that its work force could not use efficiently might well experience difficulty in a highly competitive economic environment. Thus, textile machinery could have an indirect effect on village form.

In early Rhode Island textile mill villages traditional community building practices were able to absorb the forces that were eventually to cause changes in the community form of Rhode Island mill villages. The subsequent development of the textile industry reveals both the strength of the traditional community form and the power of the forces for change. Rural Rhode Island early became something of a backwater in the progress of the textile industry in New England. The region did not bear the brunt of industrialization, and traditional forms held on longer. In architecture and plan, the early Rhode Island textile mill villages were an extension of the colonial village community form with the addition of factory buildings.

APPENDIX

FACTORY INFLUENCING COMMUNITY FORM IN EARLY RHODE ISLAND TEXTILE MILL VILLAGES

Social and Economic Conditions

The condition, socially and economically, of a region's people has a major part in determining the community plans and architectural forms that are used. The economy makes certain forms of development possible and imposes limitations that would impede or even preclude other forms of development. And of the forms of development made possible by the economy, only a few are socially appropriate.

Economic and social conditions in Europe occasioned the colonization of America. The English settlement of North America, including New England, was undertaken as a commercial venture. Founded with an economic motive, these settlements also had to have a means of support or they would perish.

England perceived that its interest lay with permitting some kinds of colonial economic activity and proscribing others. Religion likewise had an affect in the development of the New England economy, of which Rhode Island's economy is a variant.

From this economy, with its peculiarities of organization, of labor force, of technology and of capital, the mill village emanated once the textile industry began to expand in the early 1800's.

Economic and social conditions are forces, and so to understand their impact on a community form as causes promoting or inhibiting change, it is not sufficient to look at them at a single point in time. Their dynamic character and their action can better be appreciated when they are reviewed over time. Are relationships long established or new? The answer will have a bearing on expectations. For this reason the course of New England's and Rhode Island's economic and social development prior to the building of textile mill villages will be examined.

While the fundamentals of New England community planning and architecture can be traced to the middle ages, the early English settlement of the New World was Elizabethan. Many men prominent in the undertaking were products of the Virgin Queen's reign, and a significant few were in her circle.[1] And looking back beyond the men of immediate influence, one sees the social and economic forces and institutions that gave rise to English discovery and settlement were of the Renaissance.

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[1]A. L. Rowse, The Elizabethans and America, (New York: Harper and Brothers Publishers, 1959), generally.

English voyages of New World discovery and exploration were among the earliest and the most important. Henry VII, who ascended the throne in 1485, was second only to Ferdinand and Isabella of Spain in encouraging and supporting New World discovery.[2] Yet England was slow to follow discovery with colonization. This in part can be attributed to the English form of government, for unlike other European monarchs, "the English Kings were chronically broke, largely because of their dependence on Parliament for money, and England needed time to accumulate venture capital so that individuals could finance overseas enterprise."[3] During Elizabeth's reign when "England embarked on a course of expansion, spirtual and material, such as few nations have ever experienced." "...every attempt at colonization...failed." "Venture capital found it more profitable to finance privateering expeditions against Spanish treasure fleets...."[4] It was not until the reign of the first two Stuart Kings, James I (1603-1625) and Charles I (1625-1649), that the English made major efforts at colonial settlement.

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[2]Samuel Eliot Morison, The Oxford History of the American People, (New York: Oxford University Press, 1965), p. 42.

[3]Morison, The Oxford History of the American People, p. 42.

[4]Ibid., p. 43.

"...the joint-stock company was the organization that provided funds for the growth of maritime enterprise and for the beginnings of colonization."[5] The development of these companies as a major form of commercial organization "took place between the last years of Edward VI's reign (1547-53) and the first of Charles I's reign (1625-49)."[6] Even in the joint-stock companies' antecedents, there are the seeds of the organization which evolved to govern colonial life.[7]

Organized for commercial purposes,

> "Most of the English colonies of the early seventeenth century, such as Jamestown (1607), Plymouth (1620), and Massachusetts (1628), started out as trading posts, owned by English merchants and settled by their employees...except for a few gentlemen adventurers, the original planters were hired men working under a boss called a governor who was responsible to owners living in England."[8]

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[5]William Robert Scott, The Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720, (New York: Peter Smith, 1951), p. 441.

[6]Theodore K. Rabb, Enterprise and Empire, Merchant and Gentry Investment in the Expansion of England 1575-1630, (Cambridge, Mass.: Harvard University Press, 1967), p. 2.

[7]William R. Scott describes the joint-stock companies antecedents in Joint-Stock Companies, pp. 8-9:

> "By 1391, these traders (to Prussia) had already selected a governor; and in that year, the King granted them the privilege of assembling together each year, in the feast of Saint John, to make choice of a suitable person to serve in this office. The governor was given powers of executing justice amongst English merchants in the territories described and of protecting the territories he had already obtained. In 1404 a further charter was

The early trading posts could not sustain themselves by trade alone. The adventurers could bring only a few supplies with them and it was impractical to import all that was needed from England. The natives upon whom they had originally intended to rely for provisions, turned out to be unreliable in this capacity. Thus "the nature of these new outposts had to be broadened. Successful trade must involve settlement, and settlement could not be left to chance. The transportation of colonists became a vital part of every project of Western planting."[9]

Fortunately there were people in England able and willing to become colonists. Colonization could not take place unless certain conditions prevailed: people had to be able to go, there had to be a reason for them to go, and there had to be the means for them to go. During the Renaissance, the mobility of European peoples had increased greatly. In Great Britain mobility was

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> signed on behalf of the same body. The privilege of assembly was extended - the merchants now being authorized to meet, not on some fixed day, but as often as they pleased. They might also elect a governor or governors, and provision was made for the functions of their being discharged by deputies. Further, a new clause was added granting powers of making statutes and ordinances for better government of the body, while the governor was permitted to punish, "rationally" and English subjects who disobeyed these rules."

[8]Morison, Oxford History of the American People, p. 48.

[9]Marcus L. Hansen, The Atlantic Migration, 1607-1860 A History of the Continuing Settlement of the United States, (New York: Harper Torch Books, 1961), pp. 25-26.

occasioned by the economic revolution of the sixteenth century "which broke up the long established forms of rural society.... Englishmen...found themselves free to go where they would within the possessions of the crown."[10] Although "Elizabethan England was troubled by the multitude of its inhabitants,"[11] there was little capital for settlement, by 1600 the emergency had passed, and the forces for New World settlement dissipated momentarily. During the reign of Charles I problems again became acute, economic difficulties were aggravated by wars and lesser conflicts. There were intermittent incidences of the plague, the government became autocratic as the King attempted personal rule, and the Puritans felt the threat of persecution form the Church of England. It was then that

> "...the people driven by their discontent, reached out for other lands. By private effort, with little countenance from the King and often evading his regulations, they pushed the settlement of Virginia, New England, Maryland, and the West Indies."[12]

So certain economic and social forces had converged: English capital was looking for settlers for its ventures in the New World and English people were looking for ways to escape the difficult conditions in their mother

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[10]Hansen, The Atlantic Migration, p. 6.

[11]Ibid., p. 27.

[12]Allen French, Charles I and the Puritan Upheaval, A Study of the Causes of the Great Migration, (Boston: Houghton Mifflin Company, 1935), p. 19.

country. The English colonization of North America proceeded rapidly during the second quarter of the seventeenth century.

Once begun, New World settlement received broad support. In the literature of English colonization at least six main ideas were stressed: one, England was over populated; two, England wanted markets for her woolens (North America, especially New England, was considered good market because of the cold climate); three, England sorely needed precious metals (even to New England were sent mines experts); four, England paid good money to Mediterranean countries for olive oil, currants and wine, and to Baltic countries for ship timber, tar and cordage (these commodities might well be produced in English colonies); five, England needed a short route to the Indies; and six, "England had a duty to propagate Protestant Christianity and prevent the Catholic church from converting the entire native population of America."[13] There was a further religious motive among the Protestants, stronger with Puritan and nonconformists sects: in the New World there might be found a Protestant refuge, a "place of safetie" in the event of a religious war or a change of religious policy. "These were the basic motives of English coloniza-

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[13]Morison, Oxford History of the American People, p. 48.

tion for a century and a half. And from the first it was understood that any English settlement must have English law and English liberty."[14]

Launched, the English colonies were not free to navigate their own course by whatever stars they saw in their destiny. The policies of England were based on the principles of the mercantile system.

> "...the aim of the statesman of the seventeenth and eighteenth centuries was to secure for their nations as favorable balance of trade as possible. One way in which to accomplish this result was to increase the exportation of manufactured goods; and it was in this connection that colonies were regarded as especially useful."[15]

The colonial economy was restricted; it should venture only into areas where it would not compete with products available from the mother country.

At first trade was relatively free in the colonies,[16] but in 1651 Parliament, in an effort to reduce Dutch maritime supremacy, passed the great Navigation Act under which the colonies were permitted to trade in most

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[14]Morison, Oxford History of the American People, p. 49.

[15]George Louis Beer, The Commercial Policy of England Toward the American Colonies, (New York: Peter Smith, 1948), p. 66.

[16]Victor S. Clark, History of Manufactures in the United States, Volume I 1607-1860, (New York: McGraw-Hill Book Co., Inc., 1929), p. 16.

commodities only with the mother country. The Act was reenacted in 1660 and remained effective, although modified and defined, especially by the enumeration of commodities, as a basic tenet of English maritime policy into the nineteenth century.

The prevailing English attitude toward colonial manufacturers is shown clearly by a J. Cunningham, who in his 1770 "Essay on Trade and Commerce," wrote: "The greatest and most general fear, and, indeed, what the colonies of late seem to threaten us with is going into manufacturers and thereby supplying themselves with what they now take from us."[17] In 1774, the English passed what was to be the last act to restrict manufactures in the American colonies that were to become the United States, it was an act forbidding "the exportation to America of tools for the manufacture of cotton or linen or of goods wherein these fibers were used, with the exception of wool cards."[18]

The English policy of restricting colonial manufactures was not similarly employed by all European countries with American colonies,[19] and the reasons for

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[17]Quoted in Beer, Commercial Policy, p. 68.

[18]Clark, History of Manufactures, p. 25.

[19]Victor Clark in History of Manufactures, pp. 15-16, notes:

> "The royal instructions to the intendant of New France, dated March 27, 1665, directed him to 'observe that the establishment of

it were not solely economic. The English colonies had been established by private companies, and the "statesmen of England recognized economic independence precedes political independence and is, in a measure, the cause of it."[20]

The New England colonies were established as commercial ventures, to survive, they were forced to develop at least a semi-independent economy, and for what were primarily economic purposes, the colonies were regulated by the mother country. The organization of New England settlements thus was distinctly and indisputably legal, commercial and corporate; and not religious, ecclesiastical or feudal."[21]

The commercial nature of colonization was not antithetical to the strong religious convictions of the early New England settlers. The relationship between Protestanism and commercial enterprise has often been

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> manufactures and the attraction thither of fabrications of articles essential to the purposes of life constitute one of the great wants of Canada.' Twenty years later the colonial minister wrote to the authorities in the new settlements: "Nothing is of greater importance than to accustom them (the new colonists) to industry, and means must be adopted to establish manufactures suitable to the country.'"

[20]Beer, Commercial Policy, p. 68.

[21]Charles Francis Adams quoted in William B. Weeden's Early Rhode Island, A Social History of the People, (New York: The Grafton Press, 1910), p. 15.

noted:

> "Puritanism (and Protestantism generally) is a tradesman's religion.... These persuasions borrow a good deal from the business world in which they appear. For one thing, they all approve, foster and sanctify business.... Moreover rectitude, integrity, fidelity to duty, earnest acceptance of prejudice...are characteristic of a commercial society; such a society requires these vital forces to cement its mechanisms and to keep the private mind and heart docile to the industrial work at hand. This, indeed, is what makes religion and morality such a solemn matter, about which scurrilous doubts are to be repressed severely."[22]

Religious motives were exceedingly important in the establishment of the New England colonies. Sixty percent of the original investors in the Massachusetts Bay Colony had taken part in financing other Puritan ventures, and their purpose in investing was the "propagation of the Gospel of Jesus Christ."[23] Later, the colonists' religion both fostered and regulated business activity. A man was responsible for his behavior, and

> "The variety of men's occupations made it possible for each individual to find work in which he could best acquit himself of his obligations. But it also meant that some men were more exposed to temptations than others. Those whose work bore more broadly on the welfare of others were called upon to exert a scrupulousness in their transactions commensurate with the temptation to sin.

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[22]George Santayana, Dominations and Powers, Reflections on Liberty, Society and Government, (New York: Charles Scribner's Sons, 1951)., pp. 256-57.

[23]Theodore K. Rabb, Enterprise and Empire, p. 88.

> "...the soul of the merchant was constantly exposed to sin by virtue of his control of goods necessary to other people."[24]

The primary economic objective of the English colonist in the New World was to sustain himself and after that to supply commodities prescribed by the mercantile system to the mother country. Once the colonist was established, a third economic objective soon developed: the colonist not only wished to live, but to live well. This required importing English and European goods. Soon a main purpose in the New England commercial activity:

> "was to obtain the means with which to purchase English manufactures, an objective the Virginia planter accomplished by the simple expedient of the export of tobacco. New England traders without a staple in ready demand in England, resorted to a variety of indirect trades to secure the wherewithal to pay for goods from the mother country."[25]

No less than other colonists, the settlers of Rhode Island sought after worldly well being. This was a common denominator: "however great may have been the differences between Rhode Island and her neighbors in religion and politics...they were less marked in economic affairs."[26]

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[24]Bernard Bailyn, New England Merchants in the Seventeenth Century, (Cambridge, Mass.: Harvard University Press, 1955), p. 20.

[25]James B. Hedges, The Browns of Providence Plantations, Colonial Years, (Providence: Brown University Press, 1968), p. 22.

[26]Hedges, The Browns of Providence Plantations, Colonial Years, p. xiv.

However, special conditions and circumstances influenced the development of Rhode Island's economy and gave it a special character:

> The lack of a fertile hinterland prevented the colony from producing provisions sufficient even for its own consumption. In this way it differed from the neighboring and larger governments, Connecticut and Massachusetts, which possessed a large fertile river valley and a forest area for the production of lumber.[27]

Colonial Rhode Islanders, therefore, relied even more on trade and commerce for income than other New Englanders. Thus, the colonial Rhode Island economy was a species of the New England economy--in it can be seen both the characteristics of the generic economy and characteristics that distinguish it from the specific economies of the other New England colonies.

Commerce's predominance as a source of wealth in Rhode Island began in 1629 when William Coddington and his associates established Newport.[28] At first their activities were limited, for the most part, to coastal trade. The scope of trade expanded, especially during the English-French conflicts of the last quarter of the seventeenth century, and by 1681 Newport had a custom house.

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[27]David S. Lovejoy, Rhode Island Politics and the American Revolution, 1770-1776, (Providence: Brown University Press, 1958), pp. 18-19.

[28]Hedges, The Browns, Colonial Years, p. xv.

During King William's War in 1689, Newport traders reaped "large profits from privateering attacks on French and, later, Spanish shipping."[29]

While Newport was flourishing, Providence remained a backwater, where as late as 1740 the town was "still, as in the seventeenth century, but a long straight street by the water front, where on summer evenings the inhabitants sat in their doorways, smoked thin clay pipes, and fought swarms of mosquitos that rose from the marsh opposite."[30]

The need for cash with which to purchase English goods was perennial; to obtain it, merchants engaged in circular trade and even slaving. "The search for products that could be traded profitably...(also) stimulated the development of manufactures such as of iron, rum and candles..."[31]

During the decades preceding the Revolution, the Browns, a family of Providence merchants, shifted the emphasis of their undertakings and became, for the time being, manufacturers first and merchants second. They were the leading candle makers in the colonies and also owned a successful iron works.

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[29]Coleman, The Transformation of Rhode Island, p. 8.

[30]Hedges, The Browns, Colonial Years, p. ivii.

[31]Coleman, The Transformation of Rhode Island, p. 10.

The movement of Rhode Island's economic development toward the establishment of domestic manufactures was in keeping with the nature of the colony's settlement. The colony's government, as established by the charter of 1663 reflected the form of the joint-stock companies: "The Governor and Company of the English Colony of Rhode Island and Providence Plantations in New England, in America, is a bodie corporate and politique in fact and name...."[32]

Like other New England settlements, Rhode Island towns were developed by proprietors who were mindful that economic activity was necessary to lure and to hold people to the communities they had laid out. The proprietors were businessmen engaged in land development, "as capitalists the proprietors provided for the economic beginnings of the town." The establishment of "grist mills for the subsistence of settlers and saw mills for the building of their shelters" was very important.[33]

As the colonial economy progressed, the relationship between town building and economic activity was not lost: early manufacturers had to provide shelter and the other necessities of life and a few of the amenities to themselves and their workers at the site of their manufactory. For example, in 1762, Nicolas, Joseph, John and Moses Brown who owned a spermaceti candle works agreed:

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[32]Lovejoy, Rhode Island Politics, p. 27.

[33]Akagi, Town Proprietors, p. 88.

> when it said that 'it is this quantity of molasses which serves as an engine in the hands of the Merchant to effect the great purpose of paying for British manufactures.'"[38]

While the colonists through the General Assembly prayed for relief from the burden of taxes and duties on items necessary to their manufactures, they were not above boycotting the manufactures of the mother country to obtain their objective. Indeed, "most Americans soon realized that effective nonimportation was their best bet to force the home government to listen to reason."[39]

What was the impact of English mercantile policies on colonial manufactures? The net effect of custom laws "was to increase the price of foreign manufactures and to lessen return for domestic produce, so upon the whole they probably caused colonial industries to become more varied and to supply more completely home consumption"[40] Yet for the most part colonial manufactures were not highly developed, and consequently there was little upon which the English policies could have an impact:

> "Scattered throughout remote farming districts and hamlets, subject to little inspection, supported in the main by neighborhood markets and thereby evading control through commercial regulations, and pursued in the midst of a community

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[38]Hedges, The Browns, Colonial Years, p. 22.

[39]Lovejoy, Rhode Island Politics, pp. 142-43.

[40]Clark, History of Manufactures, p. 21.

> where the people already were conscious of political and economic interests separate from those of Great Britain, colonial manufactures were influenced but little by parliamentary measures and policies."[41]

The home industries the English were trying to protect differed substantially in character from the industries in North American colonies. During the seventeenth and eighteenth centuries, the English manufacturing was organized according to the "domestic system...that is to say, manufacturing was carried on in their own houses by small masters with a journeyman and apprentice or two."[42] English manufactures had progressed from the household system in which each family produced for its own consumption to the domestic system where the household was still the productive unit but where production was for the market. The domestic system was never in general use in the American colonies.[43]

In England, during the late eighteenth century, the domestic system of production was rendered obsolete when the industrial revolution ushered in the factory system of production. The workers of the old system were

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[41]Edward P. Chayney, An Introduction to the Industrial and Social History of England, rev. ed. (New York: The MacMillan Company, 1931), p. 162.

[42]Clark, History of Manufactures, p. 25.

[43]A. M. Simons, Social Forces in American History, (New York: The MacMillan Company, 1911), p. 170.

economically displaced and hardships ensued which did not go unnoticed in North America. Where the domestic system of manufacture was nonexistent or not widespread, this problem would not arise as a critical difficulty in the development of the factory system of production.

In the years immediately prior to the Revolution, American colonists were increasingly interested in manufactures and there "is evidence in support of...(the) contention that colonial merchants possessed capital which they were eager to invest in manufacture...."[44] Overall, however, agriculture and trade dominated the colonial economy; planters and merchants possessed the bulk of the wealth. In Rhode Island, economic advance had slowed:

> "By the eve of the Revolution...Rhode Island's population had ceased the rapid growth characteristic of the early years of the century. In fact, agricultural settlement had reached its natural limits almost twenty years before. Further growth therefore had become so dependent upon the ability of the commercial and manufacturing segments of the economy to absorb the population surplus, that any check to mercantile operations threatened Rhode Island's capacity to provide livelihoods for either the natural increase of population or additional immigrants."[45]

Providence, was beginning to challenge Newport as the most important town in the colony. Newport's economy was tied to commerce but in Providence there was an increasing interest in manufacturing:

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[44]Hedges, The Browns, Colonial Years, p. 122.

[45]Coleman, The Transformation of Rhode Island, p. 17.

> "In the seventeenth century when Providence was a community of planters, the only industrial establishments were the grist mills, saw mills, lime kilns, leather tanneries, and blacksmith shops. In the early eighteenth century, shipbuilding, brick manufacturing, weaving and distilling plants were established in the town, followed in the middle of the century by iron works, cider mills, cheese presses and printing shops."[46]

The Brown family of Providence, with prominence in two industries, was among the "most conspicuous of (the) time in the field of manufacture."[47]

The Revolutionary War circumscribed economic activity. The usual trade patterns with England were broken; it was both unpatriotic and very difficult to trade directly with the mother country. Peacetime ventures had to be turned to supplying the war effort. Regular trade between the American colonies was disrupted by the presence of armed forces.

Newport was held by the British and suffered a sharp decline in both population and economic activity; it never returned to its colonial eminence as a port. Providence remained free and although it experienced some economic dislocations, there was no severe decline. Indeed "through a rare stroke of good fortune, the Browns (Providence's leading family) were able to continue in business during the Revolution with their resources unim-

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[46]Cady, Development of Providence, pp. 60-61.

[47]Hedges, The Browns, Colonial Years, p. 154.

paired."[48]

Following the Revolution there was an economic contraction typical of post-war periods. What was more, "Colonial forms of manufacture were almost outmoded by the time peace was restored."[49] These economic problems were compounded by a flood of English goods, by the slowness of businessmen to learn new ways, and by a lack of capital.[50] Even by 1790, Rhode Island's economy "had not outgrown its prewar weakness. The limits of agricultural expansion had been reached; the most accessible forest resources had been used up, and the Rhode Islanders were overspecialized. They were dangerously close to relying almost exclusively on maritime endeavours."[51]

The new nation needed both a stable government and a healthy, expanding economy. The ascendant Federalists were anxious to promote manufacturing as a means to accomplish the latter objective, and they faced an uphill battle over rough economic terrain against the widely held belief that with manufacturing lay evil and with agriculture lay virtue. The opposition was armed with a potent argument: in England, the advent of widespread manufacturing, the

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[48]Hedges, The Browns, Colonial Years, p. 331.

[49]Ibid., p. 331.

[50]A. S. Bolles, Industrial History of the United States from the Earliest Settlement to the Present Times, (Norwich, Conn.: Henry Bill Publishing Co., 1879), p. 373.

[51]Coleman, The Transformation of Rhode Island, p. 22.

industrial revolution, was attended by the subjugation of the working classes and a weakening of their moral character.

The arguments marshalled in favor of manufacturing during the early Federal period were manifold. They were well summarized by Tench Coxe in his report, A View of the United States of America, published in 1794. Contrasting the situation of the new nation with regard to manufactures to the situation in colonial times, Coxe noted:

> "...as long as we remained colonial in our situation, our progress was very slow; and indeed the necessity of attention to manufactures was not so urgent, as it has become since our assuming an independent station."[52]

Among the arguments brought to bear by the proponents of manufacturing was, in essence, that unemployment, poverty, and idleness were great evils that the introduction of manufacturing would help to overcome. Coxe contended:

> "In this light the employment, in manufactures, of such of our poor, as cannot find other honest means of subsistence, is of the utmost consequence. A man oppressed by extreme want is prepared for all evil, and the idler is ever prone to wickedness."[53]

Also, it was perceived that:

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[52]Tench Coxe, A View of the United States of America, (1794), (New York: August M. Kelley, 1965), p. 37.

[53]Ibid., p. 49.

> "...children, too young for labour could be kept from idleness and rambling, and of course from temptations, to vice, by placing them for a time in manufactories, and that the means of their parents to clothe, feed and educate them could be thereby increased; that women, valetudinarians and old men could be employed; that the portions of time of housewives and young women (which are unused) could be profitably filled up...."[54]

Furthermore, conditions varied substantially among the states. Some states had rich agricultural lands and insufficient labor, and others had poor agricultural lands and difficulty employing their labor force. So,

> "By taking care not to force manufactures in those states where the people are fewer, tillage much more profitable, we shall give agriculture its full scope in the farmer, and leave all the benefits of manufacturing (so far as they are within our reach) to the latter. South Carolina, for example, must, in many instances, manufacture to an evident loss, while the advance of that business in Massachusetts will give the means of subsistence to many whose occupations have been rendered unprofitable by the consequences of the Revolution."[55]

Indeed Coxe foresaw that agriculture might well benefit from manufacturing:

> "...we should see our manufacturers encouraging the tillers of the earth by the consumption and employment of the fruits of their labours, and supplying them and the rest of their fellow citizens with the instruments of their occupations, and the necessaries and conveniences of life...."[56]

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[54]Coxe, View, p. 55.

[55]Ibid., p. 13.

[56]Ibid., p. 24.

Cotton was an example of an agricultural product the value of which had markedly increased because of the development of manufacturing: "cotton for many years before the revolution was not worth more than nine pence sterling...the perfection of the factories in Europe has raised it to such a pitch...the price has risen fifty percent..."[57]

Both Coxe and Alexander Hamilton saw manufacturing machinery as extending the capacity of labor. "Factories which can be carried on by water-mills, wind mills, fire, horses and machines ingeniously contrived...supply the force of hands to a great extent without taking our people from agriculture."[58] Hamilton contended that the objection that manufacturing would take labor away from agriculture "ceases to be formidable when it is recollected how prodigiously the proportion of manual labor in a variety of manufactures has been decreased by the late improvements in the construction and application of machines ...."[59]

There was even a patriotic duty to establish manufactures; for "unless business of this kind is carried on, certain great 'natural powers' of the country will remain inactive and useless. Our numerous mill seats...would

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[57]Coxe, View, p. 20.

[58]Ibid., pp. 38-39.

[59]Alexander Hamilton, Industrial and Commercial Correspondence of Alexander Hamilton, Anticipating his Report on Manufactures, Arthur H. Cole, ed., (New York: August M. Kelley, 1968) p.

be given by Providence in vain."[60]

Land owners would benefit by the use of mill seats as the site for manufactories:

> "The owners...to certain great water situations might safely and advantageously lay out their adjacent grounds in a town plat...and they might sell, or let on ground rents, such ordinary building lots, or such situations for water, water works, as purchasers or tennants might apply for ..."[61]

Coxe's vision was grand; along the Susquehanna for example he envisioned manufacturing towns of more than a thousand houses, with churches, libraries, schools and taverns.[62]

While some of the leading Federalist urged national policies conducive to manufactures; the states, which prior to the Revolution had relied heavily on trade, acted to encourage domestic manufactures. In New England, for instance, the Massachusetts General Court had as early as 1786 promoted the development of machinery for carding and spinning cotton and wool,[63] and on February 17, 1789 a resolution was passed to encourage the manufactory at Beverly by a grant of land. The resolution

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[60]Coxe, View, p. 14.

[61]Ibid., p. 65.

[62]Ibid., pp. 385-405.

[63]Samuel Batchelder, Introduction and Early Progress of Cotton Manufactures in the United States, (Boston: Little, Brown and Co., 1863), pp. 21-25.

proclaimed:

> "...it is essential to the true interests of this Commonwealth to encourage within the same the introduction and establishment of such manufactures as will give the most extensive and profitable employment to its citizens...."[64]

The same year the Rhode Island General Assembly, which according to Moses Brown did not have a record of supporting early ventures in textile manufacture,[65] incorporated the Providence Association of Mechanics and Manufacturers "for the purposes of promoting industry, and giving a just encouragement to ingenuity, that our manufactures may be improved, to the general advantage not only of the manufactures themselves, but of the state at large...."[66]

Economic development influenced community form. New England colonies began as chartered commercial ventures, but as they grew in population and diversified economically, they soon became political entities. In Rhode Island the colonial Charter had resemblences with the Charters of merchant adventurers' companies drawn up nearly three hundred years earlier.

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[64]Batchelder, Introduction and Early Progress of Cotton Manufactures, pp. 26-27.

[65]Moses Brown in a letter to John Dexter contained in Alexander Hamilton's Commercial and Industrial Correspondence, p. 72.

[66]John R. Bartlett (ed.), Records of the State of Rhode Island and Providence Plantations, Vol. X:1784-1792, (Providence: Providence Press Company), pp. 315-36.

The New England colonists' puritan religion did not inhibit the pursuit of business but actually fostered it; however, a moral order was imposed on its conduct.

The economy that developed was a response to the availability of certain raw materials and agricultural products, the shortage of labor, the policies of mercantilism, and the desire of the colonists to procure English manufactured goods. By the Revolution, some colonial merchants accumulated sufficient capital so that they were anxious to invest in manufactures.

After the Revolution, there was a post-war recession, but the desire to establish domestic manufactures was undiminished. These were the social and economic conditions when the factory system of textile manufacturing was successfully introduced in Rhode Island. The conditions were the context in which the subsequent development of mill villages took place.

Rhode Island's organization was essentially commercial, not ecclesiastical, manorial, or military; and from this basis of commercial organization, settlements were established for economic purposes. Later in the colonial period, the proprietors of early manufactories provided for their workers as part of the enterprise. These characteristics, the organization of capital, the supply and skills of the labor, and the structure of the economy had the potential of serving as determinants of the form of early textile mill villages.

The Development of the Textile Industry in New England Before the Introduction of the Factory System of Production

Mill villages were built in support of textile factories. The character of the textile industry as it had developed through the colonial and Revolutionary periods influenced the factory system when it was introduced in America. Certain social values and expectations surrounded the production of textiles and certain labor conditions obtained. The force of these circumstances went beyond the factory, the factory walls and working hours, and affected the dependent communities.

With food, fuel and shelter, clothing is a necessity and there is a common interest in having an adequate supply. In the American colonies the production of textiles received public encouragement and was attended by civic pride and community spirit.

In England, textiles were manufactured for export and there was an intense interest in protecting the American markets.

Motivated by necessity but limited by mercantile policies, colonial textile manufacture according to the household system of production was widespread; the domestic system of production, however, did not take hold. Following the Revolution, the development of textile manufactures received considerable attention. In 1790, Samuel Slater arrived in Pawtucket and commenced with William Almy and Smith Brown, who had the financial backing of Moses Brown, on a venture that was to prove to be the first successful attempt at factory production of textiles in the United States. Their spinning mill was but one of the many efforts to use machines in the production of textiles.

Their successful venture was a signal event and a culmination in the long course of development of textile manufacture in America which began in earliest colonial times. "One of the very first cares of early colonists of America was to obtain an ample supply of materials for clothing."[1] While North America was rich in many raw materials such as wood for fuel and lumber, and food, it "was deficient in furnishing the raw materials for the spinning wheel. This shortcoming was not recognized to any great extent until about 1640, when in

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[1]A. S. Bolles, Industrial History of the United States from the Earliest Settlement to the Present Times, Being a Complete Survey of American Industries, (Norwich, Conn.: Henry Bill Publishing Company, 1879), p. 360.

consequence of a lull in immigration there was a curtailment of cloth imports."[2]

Textile production was a form of economic activity familiar to some early colonists. Many settlers of the Massachusetts Bay Colony came "from the Eastern countries of England in the very territory where (Queen Elizabeth) had colonized spinners and weavers from the Netherlands and these people had taught others of their skills...."[3] In 1654, Edward Johnson gave an account of a settlement by people pursuing textile manufactures in his book, Wonder Working Providences of Sion's Savior in New England:

> "...the Lord brought over the zealous-affected and judicious servant of His, Master Ezekiel Rogers, who, with a holy and humble people...erected a town about six miles from Ispwich, called Rowley. These people being very industrious in every way, soone built many houses to the number of about three score families, and were the first people that set upon making cloth in this western world; for which end they built a fulling-mill, and caused their little ones to be very diligent in spinning cotton-woole, many of them having been clothiers in England till their zeale to promote the gospel of Christ caused them to wander."[4]

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[2]J. Herbert Burgy, The New England Cotton Textile Industry: A Study in Industrial Geography, (Baltimore: The Waverly Press, 1932), p. 1.

[3]C. J. H. Woodbury, Textile Education Among The Puritans, (Boston: National Association of Wool Manufacture, 1911), p. 6.

[4]Quoted in William Bagnall's, The Textile Industries of the United States, Volume 1, 1639-1810, (Cambridge, Mass.: The Riverside Press), p. 18.

Notwithstanding the production of textiles in villages such as Rowley, the want of textiles was a persistent problem. The colonists could not produce all that they needed, and for many colonists imported goods were prohibitively expensive. As a result leather clothing was not uncommon: "Men wore for a long period waistcoats and breeches of Indian dressed skins..." and "The women wore leather jerkins and petticoats very largely; and in some of the colonies the clothing of the bed was almost entirely of leather. The sheets alone were of linen."[5]

Public measures to encourage textile production were adopted. In 1645, the General Court of the Massachusetts Bay Colony passed an order which described the distress caused by the lack of adequate clothing and which encouraged raising sheep to supply the need for fiber for textile production.[6] A little more than a decade later

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[5]Bolles, Industrial History, p. 370.

[6]Bagnall, Textile Industries, pp. 6-7, quotes a portion of the order:

> "Forasmuch as wollen cloth is so useful a commodity without which wee cannot so comfortably subsist in these parts, by reason of the cold winters, it being also at present, very scarce and deare amongst us, and likely shortly to be so in parts from whence we can expect it...and whereas, through the want of woolen cloaths and stuffs, many pore peoples have suffered much cold and hardship, to ye imparing of their healths, and ye hazarding of some of their lives, and such who have been able to provide for their children cloathing of cotton, cloth, (not being able to get other) have, by that meanes, had some of their

the General Court announced measures to establish household textile manufactures in the colony:

> "This Court, taking into consideration the present straight and necessities that ly upon this country in respect to clothing, which is not like to be so plentifully supplyed from foreign parts as in times past, and not knowing any better way and means, condusable to our subsistence that the improving of as many hands as may be in spinning woole, cotton, flax, etc; - it is therefore ordered by this Court and the authority is thereof, that all hands, not necessarily employed on other occasions, as women, girls, and boys, shall be, and hereby are, enjoyned to spin according to their skill and ability, and that the selectmen in every towne do consider the condition and capacity of every family and accordingly assess them at one or more spinners,....
>
> "That every one, thus assessed for a whole spinner, do after this present year, 1656, spin for thirty weeks every year three pounds per week of linen, cotton, or wooling,...under the penalty of twelve shillings for very pound short,

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> children much scorched with fire yea, divers burnt to death; this court, therefore, (taking into consideration our present condition in this particular, also having an eye to the good of posterity, knowing how useful and necessary wollen cloths and stufs would be for our more comfortable cloathing, and how profitable a mercandize it is like to be, to transport to other parts, cloth) hereby desire all ye towns in general, and everyone in particular within the jurisdiction, seriously to weigh the premises, and accordingly that you shall carefully endeavour the preservation and increase of such sheope as they already have, as also to procure more with all convenient speed into their several towns by all such lawful wayes and means as God shall put into their hands,...."

> and the selectmen shall take special care for the execution of this order."[7]

Household manufacture was undertaken with fervor; in 1718 a group of Irish spinners and weavers held a spinning school on Boston Common. A "spinning craze" took possession of the Town as "women, young and old, high and low, rich and poor, flocked to the spinning school, ..." where the "whirr of their wheels was heard from morning to night. Prizes were offered for the best work, and the enthusiasts went about proudly, clothed in the homespun products of their own hands."[8]

The household production of textiles was imbued with public pride and community spirit. Spinning matches offered the opportunity to display skills acquired in household manufacture, to enjoy the conviviality of a social gathering, and to produce yarn. The following account of a spinning match was extracted from the "Boston News Letter."

> "Rowley, June 20, 1769. A number of thirty-three respectable ladies of this town met about sunrise, with their wheels, to spend the day at the house of the Rev'd Jedediah Jewell, in the laudable design of a spinning match. At an hour before sunset, the ladies then appearing neatly dressed, principally in homespun, a polite and generous report of American production was set their entertainment, after which, being present,

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[7]Quoted in Bagnall, Textile Industries, pp.7-8.

[8]Bagnall, Textile Industries, p. 18, quoting the Memorial History of Boston, Vol. II, p. 511.

> many spectators of both sexes, Mr. Jewett delivered a suitable and instructive discourse from Rom. xii 211: 'Not Slothful in business; fervent in spirit, serving the Lord.'"[9]

Other colonial efforts to stimulate textile production included bounties for goods produced and inducements for people skilled in textile to settle in the colonies. In 1640, the General Court of Massachusetts approved a bounty of "3d. in a shilling...to be given during a period of three years for every yard of linen, woolen, or cotton cloth, provided, in the case of the two former, they were spun and woven of 'wool or line grown here'"[10] Rhode Island paid "bounties to growers of flax as well as to manufactures...."[11] In 1751, the Rhode Island General Assembly passed an act that "exempted 'clothiers, fullers, weavers and artificers' from taxes and public service for seven years."[12]

Household systems of textile manufacture, essentially a handicraft industry, served as the beginning

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[9]Bagnall, Textile Industries, p. 58.

[10]Arthur H. Cole, The American Wool Manufacture, (Cambridge, Mass.: Harvard University Press, 1926), p. 35.

[11]Perry Walton, The Story of Textiles, A Bird's Eye View of the History of the Beginning and the Growth of the Industry by Which Mankind is Clothed, (Boston, Mass.: Walton Advertising and Printing Co., 1925), p. 133.

[12]Rhode Island Acts and Resolves, April 1751, 80-81; quoted in Coles, American Wool Manufacture, p. 35.

of the American textile industry.[13] The basis of the household system of production was that each household would as a minimum supply its own needs and, hopefully, produce a small surplus for the market." "...the hand card, the spinning wheel, and the loom, operated by hand and foot, were almost as common in the farmhouses of this country as the churn or cheese press,...."[14] A review of the wills of Rhode Island colonists shows household manufacture of textiles to have been common.[15]

Despite this emphasis on the household production of textiles, clothing was dear and often amounted to one quarter of the value of the estate left by Rhode Island colonists.[16] The ordinary citizen's wearing apparel probably had an average value of six to seven pounds.[17] So proud of domestically produced clothing were the colonists, that in 1768 "the senior class of scholars at the University in Cambridge (Harvard) have unanimously agreed to take their degrees, next commencement, dressed

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[13]Theodore A. Sande, The Architecture of the Rhode Island Textile Industry, 1790-1860, (PhD. Dissertation: University of Pennsylvania, 1972), p. xxxix.

[14]Bagnall, Textile Industries, p. 1.

[15]William B. Weeden, Early Rhode Island, A Social History of the People, (New York: The Grafton Press, 1910), pp. 111-115.

[16]Ibid., pp. 109, 122-123.

[17]Ibid., p. 126.

altogether in the manufactures of this country."[18] The following year Brown scholars followed suit showing their patriotism by wearing clothing of domestic cloth.[19] A sense of patriotism surrounded the use of domestically produced textiles. In Rhode Island, all day spinning sessions were held by the Daughters of Liberty.[20] The result of these efforts was that prior to the Revolution the colonists were supplying most of the demand for coarser fabrics.[21]

In the second half of the eighteenth century, there began in Boston efforts to manufacture textiles on a larger scale. In 1748, a number of prominent individuals subscribed to the establishment of the Linnen-Manufacture House with the objective of promoting that manufacture both to employ the poor and to relieve the drain of money from the colony that resulted from an imbalance of trade with England, and with further object of securing the immigration of skilled textile workers as means of developing domestic manufacture.[22] The December 30, 1750

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[18]Massachusetts Gazette, January 7, 1768, quoted in Bagnall, Textile Industries, p. 56.

[19]Arthur H. Cole, The American Wool Manufacture, (Cambridge, Mass.: Harvard University Press, 1926), p. 62.

[20]Walton, Story of Textiles, p. 138.

[21]Ibid., p. 131.

[22]Bagnall, Textile Industries, p. 29.

Boston News Letter carried the following "Publick Notice:"

> "...sundry looms for weaving of linnen, of all sorts, are set up at the Linnen-Manufacture House...where all Persons may have their yarn wove in the best and cheapest manner, and with the utmost dispatch. At the same place, money will be given for all sorts of Linnen Yarn.
>
> And whereas the setting up and establishing the Linnen Manufacture is undoubtedly of the utmost importance to this Province: It is propos'd by a Number of Gentlemen, very soon to open several Spinning-Schools in this Town, where children may be taught Gratis. And it is to be hop'd, that all Well-Wishers to their Country will send their children, that are suitable for such Schools, to learn the useful and necessary Art of Spinning; and that they will give all other proper countenance and Encouragement to this Undertaking."[23]

In August, 1751, "The Society for Encouraging Industry and Employing the Poor" was organized in Boston. The Boston Gazette of August 14, 1753, carried the following description of the Society's meeting on the occasion of its second anniversary which shows that engaging in textile production carried no social stigma:

> "On Wednesday an excellent serman was preached before the 'Society for encouraging Industry and Employing the Poor,' by the Rev. Samuel Cooper, after which 453, old Tenor was collected and in the afternoon near 300 spinners, some of them children of 7 or 8 years old and several of them Daughters of the best Families among us, their Wheels at Work, sitting orderly in three Rows, made a handsome appearance on the Common: - The Weavers with a Loom and one at work, on a stage made for the Purpose, attended

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[23]Dow, Arts & Crafts in New England, pp. 268-69.

> with Musick, preceeding the Society as they walk's in Procession to view the said Spinners. Several thousand Spectators assembled on the Occasion"[24]

The interest in textile manufacture must have been widespread in Massachusetts for on June 23, 1753, the General Court had granted 1500 pounds to encourage the manufacture of linen.[25] In September of that year a lot with frontage on the Common was purchased on which was constructed the Manufactory House, a "handsome brick building" on the west wall of which was portrayed "a female figure, holding a distaff in her hand, emblematic of industry."[26]

In 1762, a Spinning School was opened in the Manufactory Houses under the supervision of a Mr. John Brown,[27] who remained an occupant of the House for more then a decade.[28] In 1768, a subscription was authorized "for the purchasing of looms, wheels and other utensils ...."[29]

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[24]Dow, Arts & Crafts in New England, p. 22.

[25]Walton, The Story of Textiles, p. 136; and Bagnall, Textile Industries, pp. 35-36.

[26]Thomas Pemberton, Topographical and Historical Description of Boston, 1794, quoted in Bagnall, Textile Industries, p. 36.

[27]Dow, Arts & Crafts in New England, p. 281.

[28]Bagnall, Textile Industries, pp. 37-49, passim.

[29]Ibid., pp. 38-39.

These efforts to manufacture textiles by the domestic system of production, like the earlier efforts that established the household system of production were a matter of public purpose and pride.

The growth of textile manufacture in the colonies was greeted with profound displeasure and apprehension in England. Under the mercantile system, colonies were supposed to be a captive market for goods manufactured in the mother country; self-sufficiency was to be discouraged and competition proscribed. When North American colonies were being established, textile manufacture in England had already passed from household manufacture, in which each household basically supplied its own needs, to domestic industries, in which a household unit comprising a master, his family and a few apprentices produced for the market. "Oliver Cromwell, the stern 'Protector' of England from 1653 to 1658, watched with anxious eye the affect of the colonial development upon England's own industry, and soon prohibited the export of sheep's wool or woolen yarn from England."[30] The 1654 Act to encourage the raising of sheep in England contained a provision forbidding the export of ewes.[31] But with the shortage of both material for clothes and money to purchase imports, the colonists sole practical redress was still to encourage domestic

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[30]Walton, Story of Textiles, p. 129.

[31]Ibid., p. 130.

production. In 1683, the British disallowed two laws passed in Virginia to encourage domestic production of wool and linen cloth by offering a bounty.[32] In a further effort to curtail colonial production, Parliament in 1699 passed the Woolens Act which forbade the transport of textiles produced in America between or out of the colonies.[33]

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[32]Bolles, Industrial History, p. 369, and Cole, American Wool Manufacture, p. 40.

[33]The following section of the Act quoted in Cole, American Wool Manufacture, p. 41, indicated the comprehensiveness of its purpose:

> XIX And for the more effectual Encouragement of the Woollen Manufactures of this Kingdom be it further enacted by the Authority aforesaid, that from and after the first Day of December in the Year of Our Lord One Thousand Six Hundred and Ninety-Nine, no Wooll, Woollfells, Shortlings, Morthings, Wooll-flocks, Worsted, Bay, or Woollen Yarn, Cloth, Serge, Bays, Kerseys, Soys, Frizes, Druggets, Cloth-Serges, Shalloons, or mixed with Wooll or Wooll-flocks, being of the Product of Manufacture of any of the English Plantations in America, shall be loaden or laid on board in any Ship or Vessell, in any Place or Parts within any of the said English Plantations, upon any Pretense whatsoever; as likewise, that no such Wooll, Wooll-fells (or other goods afore-mentioned)...shall be loaden upon and Horse, Cart, or other Carriage, to the intent and Purpose to be exported, transported, carried or conveyed out of the said English Plantations to any other of the said Plantations, or to any other Place whatsoever;....

In 1731, the House of Commons was induced, by complaints from merchants and manufacturers that colonists were substituting English goods with goods of colonial manufacture, to have their Board of Trade conduct an inquiry "with respect to laws made, manufactures set up, or trade carried on, detrimental to the trade, navigation, or manufactures of Great Britain."[34] The colonists were restive and disinclined to provide information[35] about textile manufactures. In general, the colonists, so far as they were able, disregarded or circumvented regulations imposed by the mother country.

During the Revolution the shortage of cloth and clothing was often acute.

After the Revolution, the colonial practices were not quickly dropped. Household manufacture continued; women and children spun and wove, and each "village...had its fuller and dyer...who carried on his business publically for a number of customers."[36] There were also itinerant weavers, and other craftsmen skilled in textile trades. In New England especially, merchants with the renewal of trade with England purchased quantities of textile goods to sell in their stores or through their agents. These

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[34]Bagnall, Textile Industries, p. 14.

[35]Ibid., p. 16.

[36]Bolles, Industrial History, p. 372.

goods were usually purchased on credit and the merchants were deeply embarassed when the weak post-war economy so depressed sales that timely remittance to creditors was difficult when not impossible.

Independence brought freedom from restrictions designed to inhibit manufactures, and efforts to encourage domestic manufactures were quick to develop. In no area of manufacture was there greater interest than in textiles.

Generally, the colonial system of inducements to manufactures was renewed or expanded; these inducements included bounties for production and invention, subsidies to new and promising ventures, grants of exclusive privileges and monopolies, and relief from obligations such as taxes.

The first mechanized textile manufactory in New England, the second in the United States, was established in Beverly, Massachusetts, in 1787. That year Thomas Somers, "an Englishman, expert in the cotton manufacture," petitioned the Massachusetts General Court for assistance because he had lost, due to ship wreck, "almost one half of the small property he had to subsist on till he could get into business." Somers had left Baltimore where he had originally been induced by an Association of "Trades-men and Manufacturers" to establish himself. But because he found "soon after his arrival (there)...that they were very dilatory about enccuraging the matter, and (so) with the advice of some friends, he resolved to try what might

be done in Boston."[37] The General Court granted Somers relief of 20 lawful money.

Somers was taken up by some businessmen and before the end of the year a brick factory was built where the machinery was driven by horses[38] and corduroys and bedticks were woven.[39]

In 1789, the principals of the Beverly concern petitioned the Massachusetts General Court for incorporation. The petitioners' argument was that mechanized textile production was in the public interest, that there were financial dangers to individuals undertaking the venture, and that it was therefore appropriate for public protections to be provided. The Petition stated:

> "That no kind of manufacture appears... more practicable, at present, or more useful, than that of cotton. The principal part of the Labor is performed by machinery;...it will afford employment to a great number of women and children, any of whom will otherwise be useless, if not burdensome to society."

The Petition went on to relate the costs incurred in introduction of the methods of production and then stated:

> "Your petitioners, therefore conceive that it is absolutely necessary to the

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[37]Bagnall, Textile Industries, p. 89.

[38]Samuel Batchelder, Introduction and Early Progress of Cotton Manufacture in the United States, (Boston: Little, Brown and Company, 1863), pp. 32-33.

[39]Bolles, Industrial History, p. 405.

> establishment of such a manufacture as this that the Legislature should grant some particular favors to the first adventurers, otherwise to them even success will be attended with a certain and considerable loss, a sacrifice which they presume the community cannot reasonably expect.
>
> "Your petitioners, therefore, pray this Honorable Court to take the premises into their consideration, and grant them the powers and privileges of an incorporation for the purpose of establishing and carrying on the manufacture of cotton and other goods; with such immunities and favors as they, in their wisdom, shall think necessary to counterbalance the disadvantages and expenses peculiar to its introduction."[40]

The petition was granted and the company was incorporated as "The Proprietors of the Beverly Cotton Manufactory."

Projects and experiments in textile manufacture were widespread, not isolated.[41] Boston, New York, and Philadelphia were the important centers. That the interest in developing manufactures was widespread and commonly held by a large but diverse segment of the population was exceedingly important: "Spirit of enterprise and adventure, not confined to the captains of industry but shared by the great part of the laboring population, gave to the industrial development of New England its essentially vigorous character."[42]

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[40]The Petition is quoted in Bagnall, Textile Industries, pp. 91-92.

[41]Bagnall, Textile Industries, pp. 116-123, 127-129.

[42]Caroline Ware, The Early New England Cotton

Rhode Island ventures were numerous. In 1788, Daniel Anthony, Andrew Dexter and Lewis Peck established a manufactory for Home Spun Cloth in Providence.[43] A year earlier, Daniel Anthony and John Reynolds together had begun experiments in East Greenwich, with a spinning jenny which Moses Brown later purchased. Joshua Lindly, of Providence, was engaged in the building of a carding machine.[44] In 1787, Joseph Alexander and James McKerries came to Providence from Scotland and briefly set themselves up as expert fly-shuttle weavers.[45] John Fuller of East Greenwich with Smith Brown, later a partner in the firm of Almy, Brown and Slater, and a kinsman of Moses Brown, established a stocking weaving business.[46]

No one, however, was more interested in textile manufacture than Moses Brown, who with his brothers, was the State's leading manufacturer. Prior to the establishment of the Hope Furnace in 1764 Moses Brown "had already attempted to introduce the stocking weaving industry into Providence and to encourage the cultivation of mulberry

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Manufacture: A Study in Industrial Origins, (Boston: Houghton, Mifflin Company, 1931), p. 14.

[43]Walton, The Story of Textiles, p. 161.

[44]Bagnall, Textile Industries, p. 149.

[45]Walton, The Story of Textiles, pp. 161-162.

[46]Ibid., p. 162.

trees for the growth of silkworms.[47] By the middle of the 1780's Brown had:

> concluded that the remedies for American economic dislocation were not to be found solely in re-establishment of commercial connections.... He (Brown) could see very little evidence that either line enterprise (importing from England and importing from the Indies) did much to alleviate the distress of the unemployed, whose numbers were increasing daily. Importation of English goods merely retarded domestic industrial development he concluded, and East India imports were luxuries the people could well do without.[48]

Having come to these conclusions, Moses Brown returned to business--he had withdrawn from an active role in the family enterprises in 1773 when he became a Friend because he was "convinced that his capacity to do good had been severely limited by his political, business and social commitments."[49]

Brown reasoned that in order to achieve economic as well as political independence:

> "Americans must develop domestic industries and manufactures that would give employment to American workers, redress the imbalance of trade and debt with England, and stop the drain of specie from the country. After a careful study of the American economy,

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[47]Mack Thompson, Moses Brown, Reluctant Reformer, (Chapel Hill: University of North Carolina Preys, 1962), p. 22.

[48]Ibid., p. 204.

[49]Ibid., p. 78.

> he concluded that the development of an American textile industry would best achieve these ends."[50]

As an experienced merchant, Brown knew that the "Cloth produced by household manufacture was not only inferior in quality to English imports; it was also more expensive."[51] An obvious solution to the problem of reducing the cost of cloth was to use machinery in production as the English were doing.

With his son-in-law, William Almy, Moses Brown entered into textile manufacture hiring Joseph Alexander, a weaver who had recently arrived from Scotland.[52] Then in 1789, Moses Brown purchased the experimental spinning frame and carding machine which had been constructed by John Reynolds of East Greenwich and had been designed to be operated by hand crank. Brown moved them to Providence where he attempted to run them by water power;[53] and then moved them again to a fulling mill he had purchased in what is now the City of Pawtucket.[54]

In addition to his own experiments, Moses Brown was in contact with others experimenting or venturing into

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[50]Thompson, Moses Brown, p. 206.

[51]Ibid., p. 207.

[52]Ibid., p. 214.

[53]Ibid., p. 217.

[54]Ibid., pp. 218-219.

textile manufacture. During the Revolution and afterwards Brown remained in close touch with Philadelphia Quakers, two of whom, Samuel Wetherill and Tench Coxe, were deeply interested in textile manufacture.

Moses Brown's interest in textile manufacture must have been widely known, for in December, 1789, Samuel Slater, who had recently arrived in New York from England and had first-hand knowledge of Arkwright spinning, wrote Brown requesting a position:

> "Sir, - A few days ago I was informed that you wanted a manager of cotton spinning, &c. in which business I flatter myself that I can give the greatest satisfaction, in making machinery, making good yarn, either for stockings or twist, as any that is made in England; as I have had opportunity, and an oversight, of Sir Richard Arkwright's works, and in Mr. Strutt's mill upwards of eight years. If you are not provided for, should be glad to serve you; though I am in the New York manufactory, and have been for three weeks since I arrived from England. But we have but one card, two machines, two spinning jennies, which I think are not worth using. My encouragement is pretty good, but should much rather have the care of the perpetual carding and spinning. My intention is to erect a perpetual card and spinning. If you please to drop a line respecting the amount of encouragement you wish to give, by favour of Captain Brown, you will much oblige, sir, your most obedient

humble servant,

Samuel Slater[55]

When Moses Brown received this letter from Slater, he already knew "everything there was to know about cloth manufacturing in America."[56] His response to Slater was characteristically conservative and determined, not sanguine:

> "Friend, - I received thine of 2d inst. and observe its contents. I, or rather Almy & Brown, who has the business in the cotton line, which I began, one being my son-in-law, and the other a kinsman, want the assistance of a person skilled in the frame or water spinning. An experiment has been made, which has failed, no person being acquainted with the business, and the frames imperfect.
>
> We are destitute of a person acquainted with water-frame spinning; thy being already engaged in a factory with many able proprietors, we can hardly suppose we can give the encouragement adequate to leaving thy present employ. As the frame we have is the first attempt of the kind that has been made in America, it is too imperfect to afford much encouragement; we thought thou couldst perfect and conduct them to profit, if thou wilt come and do it, thou shalt have all the profits made of them over and above the interest of the money they cost and the wear and tear of them. We will find stock and be repaid in yarn as we may agree, for six months. And this

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[55]The text of Slater's Letter is contained in George S. White, Memoir of Samuel Slater The Father of American Textile manufactures; Connected with a History of the Rise and Progress of the Cotton Manufacture in England and America; with Remarks on the Moral Influence of Manufactories in the United States, (Philadelphia, 1836), p. 72.

[56]Thompson, Moses Brown, pp. 206-207.

> we do for the information thous can give, if fully acquainted with the business. After this, if we find the business profitable, we can enlarge it, or before, if sufficient proof of it be had on trial, and can make any further agreement that may appear best or agreeable on all sides. We have secured only a temporary water convenience, but if we find the business profitable, can perpetuate one that is convenient. If thy prospects should be better, and thous should know of any other person unengaged, should be obliged to thee to mention us to him. In the meantime, shall be glad to be informed whether thous come or not. If thy present situation does not come up to what thous wishest, and, from they knowledge of the business, can be ascertained of the advantages of the mills, so as to induce thee to come and work ours, and have the credit as well as advantage of perfecting the first water-mill in America, we should be glad to engage thy care so long as they can be made profitable to both, and we can agree. I am, for myself and Almy & Brown, thy friend,
>
> Moses Brown[57]

Slater took the offer and the American textile industry was launched.

Moses Brown knew, however, that formidable obstacles impeded the development of the new industry, which to his thinking included "an inadequate supply of raw materials, a poorly trained, inexperienced labor force, a lack of technological skill, poor distribution facilities, and primitive marketing."[58] In 1791 Moses Brown wrote to

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[57]White, Memoir of Samuel Slater, pp. 72-73.

[58]Thompson, Moses Brown, p. 206-207.

John Dexter, supervisor of revenue for Rhode Island, describing the successful venture of Almy, Brown and Slater and reiterating his previous concerns.[59] His efforts to develop textile manufactures had been perplexed by the lack of adequate machinery and even more the necessity of employing "Workmen of the most Transient kind and on whom Little Independence could be placed...."[60] The industry's progress was hampered by the intrusion of "Quantities of British Goods of those kinds on hand Exceeding the Market Obstruct the sale of Our Own Manufacturys...."[61]

This situation "forms a very great Discouragement of Men of Abilities to lay out their property in Extending Manufacturies,...."[62] Brown urged that "Encouragement (be) given to protect the Manufacturer from being intercepted in the sale by foreign importation."[63]

Brown also reasoned that more attention should

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[59]Letter of Moses Brown to John Dexter, on Manufactures in Rhode Island, Arthur H. Cole, ed., Industrial and Commercial Correspondence of Alexander Hamilton, Anticipating His Report on Manufactures, (Chicago: A. W. Shaw, 1928, published for the Business Historial Society, Inc.), pp. 71-79.

[60]Moses Brown to John Dexter, Commercial Correspondence of Alexander Hamilton, p. 73.

[61]Ibid., p. 75.

[62]Moses Brown to John Dexter, Commercial Correspondence of Alexander Hamilton, p. 77.

[63]Ibid., p. 77.

be paid to "Raising Cotton in Our Southern States...."[64] And that the employment in the manufactory of "children from eight to fourteen years it is as near as a Total Savings of Labour to the Country as perhaps Any Other that can be named,...."[65]

Samuel Slater had the necessary technical knowledge of the Arkwright processes and the determination to put his knowledge to work. Moses Brown had wide experience and broad practical knowledge of manufacturing in New England and the requisite capital, patience born by a "humanitarian concern for the welfare of Friends" and a "deep seated desire to perform a public service as well as make a profit...."[66] The venture was successful. And the firm of Almy, Brown, and Slater "was indeed the parent of the American cotton industry, for it was responsible, directly or indirectly, for the creation of most of the twenty-seven mills which the Secretary of the Treasury discovered in operation in Rhode Island, Southern Massachusetts and Eastern Connecticut in 1809."[67] What is more, "all the factories built before the War of 1812 were built after the plan introduced by Slater, with very little

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[64]Moses Brown to John Dexter, Commercial Correspondence of Alexander Hamilton, pp. 75-76.

[65]Ibid., p. 77.

[66]Thompson, Moses Brown, p. 231.

[67]Ware, Early New England Cotton Manufacture, pp. 27-28.

modification...."[68]

The factory system of textile manufacture thus introduced commenced to grow until it overshadowed and then supplanted household manufacture. Domestic manufacture, small units producing for the market, never really took hold in America. As a consequence the introduction of the factory system did not, in America, bring hardship to an established group of manufacturers as it had in England.

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[68]Batchelder, Introduction and Early Progress, pp. 56-57.

The Requirements of the Factory System

The factory system had a special character; capital, labor, energy and machinery were marshalled in a particular way to accomplish the tasks of production; and order was introduced into society which affected the lives of the people and the communities in which they lived. The system's character was manifest in the buildings, the factories, which housed it. According to Dr. Andrew Ure, a nineteenth century authority, the term 'factory' designates"

> "the combined operation of many orders of work people, adult and young, tending with assiduous skill a system of productive machines continuously impelled by a central force. (This definition)...excludes those mills in which the mechanisms do not form a connected series, or are not dependent upon a prime mover."[1]

In America the key to establishing the system had been to obtain machinery that worked. The English did

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[1]Quoted in William F. Pierson, Jr., "Industrial Architecture in the Berkshires," (Ph.D. dissertation; Yale University, 1949), p. 11.

nothing to help--the last restriction on colonial manufactures passed by Parliament prior to the Revolution "forbade the exportation of tools for the manufacture of cotton or linen or of goods wherein these fibers were used, with exception of wool cards."[2] Following the Revolution, English efforts to prevent exportation of tools for textile manufacture to America were undiminished. Slater had to smuggle himself out of England:

> "...as the government restrictions were very severe, and very unjust; the officers were very scrupulous in searching every passenger to America. He (Slater) therefore resolved not to take any pattern, nor to have any writing or memorandum about him, but trusted wholly to his acquirements in the business and to excellent memory. His appearance was also in his favour, it being that of an English farmer's son, rather than that of a mechanic."[3]

The manufacture of cotton textiles is a process of many steps. Cotton is transported in bales which must be opened, the cotton must be "picked" to loosen the fibers and cleaned. The fibers are then disentangled by "carding" and laid parallel to each other by "drawing." The fibers are then given a loose ropelike form by "roving." The "sliver" produced by roving is then transformed into yarn by "spinning." The yarn is then spooled, warped and

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[2]Clark, History of Manufactures, p. 18.

[3]White, Memoir of Samuel Slater, p. 37.

finally woven into cloth.

The product of Almy, Brown and Slater's venture in Pawtucket was cotton yarn. Slater's machinery consisted of three cards and two spinning frames.[4] For nearly two years, the firm operated in makeshift quarters, but in early 1793, the firm built:

> "a new mill especially designed for cotton business. The three cards and two spinning frames, containing together a total of 72 spindles were removed thereto and set in motion on July 12, 1793. This was the first cotton mill on the American continent in which old processes of improved Arkwright cotton spinning and preparatory machinery were carried on under one roof."[5]

The industry was born, "but its progress for many years was extremely slow...the year 1810 (was the real)...starting point, at which time it had begun to put on some appearance of importance."[6] This slow progress can be attributed "to the lack of capital, to high wages, high interest rates, poor machinery, and above all, a lack of skilled labor...."[7] During this period of infancy, the textile industry remained essen-

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[4]Frederick L. Lewton, "Samuel Slater and the Oldest Cotton Machinery in America," Smithsonian Report for 1926, (New York: S. S. Slater & Sons, 1927), p. 505.

[5]Ibid., p. 506.

[6]Charles T. James, "Practical Hints on the Comparative Cost and Productiveness of the Culture of Cotton and the Cost and Productiveness of its Manufacture. Addressed to the Cotton Planters and Capitalists of the South." (Providence: Joseph Knowles, 1849), p. 40.

[7]John Ker Towles, "Factory Legislation of Rhode

tially as Slater had introduced it:

> "In 1810, cotton textile mills were still confined to spinning; any attached weaving shed was merely an agglomeration of handlooms working in isolation from each other. Only roving and spinning processes used power-operated machinery."[8]

Before the War of 1812, all factories were built "after the plan introduced by Slater, with very little modification."[9]

In 1814, Francis Cabot Lowell, a wealthy Boston merchant, introduced the power loom, "an instrument which changed the whole character of the manufacture...."[10] In Lowell's factory, an entirely new arrangement was adopted; "in order to save labor, in passing from one process to another...all the processes for the conversion of cotton into cloth (were arranged) within the walls of the same building"[11] This method of textile manufacture, developed

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Island," American Economic Association Quarterly, Vol IX, No. 3. (October, 1908), p. 2.

[8]Paul F. McGouldrick, New England Textiles in the Nineteenth Century: Profits and Investments, (Cambridge, Mass.: Harvard University Press, 1968), p. 18.

[9]Batchelder, Introduction and Early Progress, pp. 56-57.

[10]Nathan Appleton, "Introduction of the Power Loom and Origin of Lowell," (Lowell, Mass.: B. H. Penhallow, 1858), p. 14.

[11]Ibid., p. 14.

by Lowell and known as the Waltham process, quickly attracted substantial capital and became the dominant form of textile industry in northeastern Massachusetts, southern New Hampshire and Maine.

The textile industry in and around Rhode Island was also expanding. In 1815, Richard Gilmore, a Scotsman with knowledge of the powered loom, immigrated to Rhode Island. He was first employed by the Slaters, Samuel and his brother John who had come over from England in 1805, but Samuel Slater was reluctant to experiment with power-loom weaving. So Gilmore went to Lyman Mills in North Providence where he was employed to build power looms; their successful operation in 1817,[12] brought a fundamental change to the textile industry in Rhode Island.

Gilmore's machinery differed substantially from that developed by Lowell. The scale of operations tended to be smaller and more specialized in Rhode Island factories. Thus, "There were established two different systems or 'schools' of manufacturing, one which might be denominated the 'Rhode Island' and the other the 'Waltham' system."[13]

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[12]A good account of the introduction of the power loom into the Rhode Island textile industry by Gilmore is given in Batchelder, Introduction and Early Progress, pp. 70-72.

[13]Ibid., p. 73.

During the period from the War of 1812 to 1830, the technology of the textile industry advanced rapidly. In 1810, only two processes, roving and spinning, used power-operated machinery, but by "about 1830, all but two minor processes in cloth manufacturing has been mechanized."[14]

The successful development and implementation of machinery during the decade and a half following the War of 1812 was made possible because another problem endemic to the establishment of the industry had been resolved--there had developed an adequate supply of skilled workmen and mechanics, capable of building, maintaining, and in some instances, improving on or even inventing textile machinery.

The labor problem, the shortage of skilled workmen, in almost all trades had been a pervasive and persistent problem throughout the colonial period and into the first few decades of the life of the New Republic. The shortage of skilled labor exerted a seminal influence on many aspects of life in America--for example, it imparted certain qualities to the character of building.[15] In their efforts to establish their manufactories, the Browns canvassed southern New England and beyond for skilled workmen. In his 1791 letter to John Dexter, Moses Brown

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[14]McGouldrick, New England Textiles, p. 18.

[15]See page 22, note 34.

decried the lack of labor as the chief problem in establishing textile manufactures.[16]

The nascent textile industry's labor problem had two facets; first, it was necessary to attract skilled mechanics to build and maintain the textile machinery, and second, it was necessary to obtain a labor force to work in the factory tending the machinery. Both the general shortage of labor and the nation's physiocratic bias complicated the second problem--the labor to be employed in the factory should not drain labor away from other pursuits, especially agriculture. The employment of women and children of both sexes, especially if poor, was the obvious solution[17] and one for which there was ample precedent.[18]

Since skilled labor was wanting in the United States, incentives were offered to induce men with a knowledge of textile machinery and processes to immigrate from England. The Almys and Browns solved the critical problem of the lack of a knowledgeable mechanic by obtaining the services of the Englishman Samuel Slater who later entered into partnership with them. Their successful venture was practically a training school, providing knowledge and skills to others who later started their own textile

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[16]See page 155, note 61.

[17]See page 127, note 54.

[18]See page 137, note 7.

manufacturing concerns. "...most of the establishments erected from 1790 to 1809, were built by men who had, either directly or indirectly, drawn their knowledge of the business from Pawtucket (where the Almy, Brown and Slater firm was located)."[19] The dissemination of information was not always above board: "workmen employed by Mr. Slater, in Pawtucket, took advantage of their opportunity to steal patterns and models of his machine; and in this way attempts were made to extend the business,...."[20]

The immigration to Rhode Island of men skilled in the textile trades from Great Britain did not abate with the arrival of Samuel Slater. During the War of 1812, Federal marshalls took a census of "enemy aliens," English males in the United States over 14 years of age. The census recorded the "alien's name, age, occupation, length and places of residence in the United States, number of people in the family unit, and whether or not the individual had declared his intention to become an American citizen."[21] In Rhode Island:

> "Although the textile industry was still in its infancy, a high proportion of these British subjects - at

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[19]White, Memoir of Samuel Slater, p. 107.

[20]Ibid., p. 183.

[21]Peter J. Coleman and Penelope K. Majeske, "British Immigrants in Rhode Island during the War of 1812," Rhode Island History. 34, (August, 1975), 3:66.

> least seven out of ten - were attracted by opportunities in cotton and wool manufacturing. More than half (70) (of all immigrants) were hand weavers, seven were machine makers, and another six were textile manufacturers. Just how significant this was can be judged from the fact that nationally only 14 percent of enemy aliens worked in the textile industry compared with 21 percent farmers, planters, or gardeners; 11 percent merchants or employees in commercial firms; 10 percent laborers; and 9 percent construction trades or woodworking.
>
> It is clear that these immigrants played an important role in the development of a skilled labor force in Rhode Island."[22]

English and Scottish labor was highly desired by mill owners during the early period of development.[23]

The second labor problem was to obtain a work force for the factory. Fortunately the "...only skill needed for tending the machine was the ability to knot a broken thread, a facility easily acquired by children ...."[24] The employment of children in the textile industry was also an acceptable solution to the labor problem because "Generations of American children had grown up in the atmosphere of home spinning and weaving of wool and linen, and more recently, to a small extent, the processing of cotton. From early colonial times schools had

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[22]Coleman and Majeske, Rhode Island History, p. 68.

[23]Ware, Early New England Cotton Manufacture, pp. 203-204.

[24]Ibid., p. 26.

been fostered, or even legally prescribed, for the training of children to spin."[25]

Education in textile trades predated colonial times--the colonists of Massachusetts Bay came "from the Eastern countries of England in the very territory where (Queen Elizabeth) had colonized spinners and weavers from the Netherlands and these people had taught others of their skills...."[26] But since guilds were not perpetuated in New England, textile education became a matter of public concern,[27] and spinning schools were established.

Employment of children as operatives in the textile factories was the ready and logical solution to the labor problem. Employing children did not take men away from other activities and it continued the colonial tradition of training children to work in the production of textiles. What was more, the child and family labor system was used in England and was the one with which Samuel Slater was familiar.[28] As the factory system spread through Rhode Island, southern Massachusetts, and eastern Connecticut, "the family system was the obvious method of

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[25]E. H. Cameron, Samuel Slater, Father of American Manufactures, (Portland, Me: The Bond Wheelwright Company, 1960), pp. 58-59.

[26]Woodbury, "Textile Education," p. 6.

[27]Ibid., p. 18.

[28]Batchelder, Introduction and Early Progress, p. 74.

employment,...."[29]

The family system of labor was also ideally suited to the early stage of development of the factory system of production. Many of the early mills "were small family enterprises, wherein, the owners invested their savings, managed the business and employed their own families."[30] In these ventures, the family labor system and the employment of children was natural. The rest of the labor force was made up of children from neighboring farms.[31]

From a slow beginning, the textile industry had gained momentum by 1810 and with some fluctuations, especially after the end of the War of 1812, there was continued expansion. People were needed in ever increasing numbers to work in the mills, "in the early twenties, some mills were still situated in a neighborhood which would furnish a sufficient labor force to operate the mills. Most, however, had already been forced to send away for extra hands."[32] To obtain the labor force necessary for the expanding industry, "Agents scoured rural districts

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[29]Ware, Early New England Cotton Manufacture, p. 199.

[30]Editha Hadcock, "Labor Problems in Rhode Island Cotton Mills, 1790-1940," (Ph.D. dissertation, Brown University, 1946), p. 7.

[31]Ware, Early New England Cotton Manufacture, p. 211.

[32]Ibid., pp. 211-212.

for native help"[33] In 1827, Smith Wilkinson responding to questions submitted to him by George White described how the labor force was procured for a mill in Pomfret, Connecticut established in 1806 by Rhode Islanders from Providence and Pawtucket:

> "In collecting our help, we are obliged to employ poor families, and generally those having the greatest number of children, those who have lived in retire situations on small and poor farms, or in hired houses, where their only means of living has been the labour of the father and the earnings of the mother."[34]

As the industry expanded and the mills became more numerous, the supply of nearby children was absorbed. Additional labor had to be attracted from areas outside the mill's immediate radius. Advertisements placed in newspapers such as the "Massachusetts Spy of Worcester, and the Providence Manufacturers' and Farmers' Journal offered attractive employment to large families, those with five or six children preferred."[35] A typical advertisement read:

> Ten or twelve good respectable families consisting of 4 or 5 children each, from 9 to 16 years of age, are wanted to work in a

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[33]Burgy, New England Cotton Textile Industry, p. 157.

[34]White, Memoir of Samuel Slater, p. 127.

[35]Ware, Early New England Cotton Manufacture, p. 29.

> cotton mill on the vicinity of Providence. ***Apply to William Sprague, Jr., at Natick Village."[36]

The employment of poor families in the mills was attended by certain difficulties. In his letter to George White, Smith Wilkinson went on to say of the poor families attracted from marginally productive farms to work in the textile mills:

> "These families are often very ignorant, and too often vicious; but being brought together into a compact village, often into families, and placed under the restraining influence of example, (they) must conform to the habits and customs of their neighbors or be dispised and neglected by them. Thus it happens sometimes that when it becomes generally known that a family are noted for any vice, they are neglected by the rest, and no person, male or female, will visit or be seen keeping company with them, who is at all concerned to sustain a good name."[37]

To counteract tendencies toward "viciousness" in their labor force and to protect the reputation of the new industry, early mill proprietors often encouraged religion and education and proscribed drinking and gaming. These manufacturers thus established "a reputation for their stern but benevolent paternalism. In their effort to maintain the efficiency of their labor force they

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[36]Providence Manufacturers' and Farmers' Journal, 17 January 1828, quoted in Towles, "Factory Legislation," p. 10.

[37]White, Memoir of Samuel Slater, p. 127.

endeavored to control the standards of living, habits and morals of their labor force."[38] Educational facilities were provided by mill owners "long before the mill parents perceived the value of schools, or middle class leaders urged compulsory education."[39]

Moses Brown had an abiding interest in education and Samuel Slater upon the completion of the Old Slater Mill introduced the system of Sunday-school instruction in America.[40]

In 1800, the first public school law was passed chiefly "through the influence of the Providence Association of Mechanics and Manufacturers...."[41] But this "first attempt to establish free schools was virtually defeated by simple non-enforcement and the act was formally repealed (by the General Assembly) at the February session, 1803."[42] Although this early effort to establish public schools failed, a few mill owners continued their efforts to provide education to the children working in their mills. However, by 1814 the situation was such that "Governor Knight in a message to the General Assembly called attention

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[38]Hadcock, "Labor Problems," p. 36.

[39]Ibid., p. 35.

[40]White, Memoir of Samuel Slater, p. 107.

[41]Towles, "Factory Legislation," p. 12. Citing a petition to the Rhode Island General Assembly on February, 1799.

[42]Ibid., p. 13.

to the need of providing public education for the factory children. He emphasized the fact that a large number of factory children were growing up in ignorance and that this was a special danger to democratic government."[43] In addition to their own philanthropic inclinations mill owners promoted education as a means to combat prejudice in some corners against manufacturing. This prejudice was keenly felt; in 1815, Samuel Ogden wrote, "I am aware, that many persons in this country are opposed to extensive manufactures. But let me ask, what can be done in a country to meet the lasting approbation of all of the people."[44] So,

> "The efforts of manufacturers to secure and retain the respect of the community by keeping up the character of their help and maintaining attractive conditions of work and life explains much that is characteristic of the albor situation in the early American mills."[45]

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[43]Towles, "Factory Legislation," pp. 13-14.

[44]Samuel Ogden, "Thoughts, What Probable Effect the Peace with Great Britain will have on the Cotton Manufacture of this Country, Interspersed with Remarks on our Bad Management in the Business, and the way to Improvement so as to meet Imported Goods in Cheapness, at our Home Market, Pointed Out," (Providence: Printed for the Author by Goddard and Mann, 1815), p. 5.

[45]Ware, Early New England Cotton Manufacture, p. 203.

The length of the work day in the factory was governed by the number of hours of daylight, and for the year average was slightly more than twelve hours per day. In the summer the days were longer, and in the winter, they were shorter. There were six days in the work week, and so a full work week averaged 72 hours.[46] In his 1827 questionnaire, George White asked textile manufacturers the hours of work and the age of employees. Smith Wilkson replied:

> "The helps are required to labour all the time, which people can sustain in regular service through the year, consistent with what is necessary to attend to their personal wants - for meals, sleep and necessary relaxation, and a proper observance of the Sabath. The usual working hours, being twelve, exclusive of meals, six days in the week, - the workmen and children being thus employed, have not time to spend in idleness or vicious amusements."[47]

Another respondent simply answered:

> "An average through the year of twelve hours, is everywhere understood as factory hours; this by common consent, not have I heard of any attempt to increase the number as a rule of employment."[48]

The same respondent also stated:

> "Children under ten years are generally unprofitable at any price, and

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[46]Montgomery, Cotton Manufacture, p. 174.

[47]White, Memoir of Samuel Slater, p. 126.

[48]Ibid., pp. 128-129.

> it is very seldom that they are employed, unless their parents work in the mill, and they are brought in to do light chores or some light work, such as setting spools in the frame, or piecing rolls. As far as I am acquainted, there is more attention paid to schooling children in manufacturing villages, than in districts of other employments."[49]

Fifty cents per week was the common wage rate for young children in Rhode Island; older children received more, up to the rate of about $2.50 per week for adults.[50] Generally, however, it was unprofitable to employ young children, so most working children received more than the minimum rate.[51] "The mills did not offer the same pecuniary advantage to men that they did to women, for the former's wages were no higher than those of wheelwrights, clothiers, harness makers and mechanics."[52] Fortunately, mill work was not strenuous, for the workers it may have been somewhat monotonous "but they could stand the long hours in these close surroundings because they were not subject to great pressure."[53] Overall, "the terms and conditions under which mill labor worked tended slightly to exceed rather than to fall below the standards of the

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[49]White, Memoir of Samuel Slater, p. 128.

[50]Ware, Early New England Cotton Manufacture, pp. 244-245.

[51]Ibid., p. 244.

[52]Ibid., p. 244.

[53]Ibid., p. 254.

community."[54]

Initially, capital for textile manufacturing ventures "was drawn in small amounts as a speculation from men of an experimental or patriotic turn of mind"[55]--of this mode of capitalization, Moses Brown's support of Almy, Brown and Slater was exemplar. Some of the early expansion of the industry from Pawtucket was financed from the "savings of craftsmen, to whom spinning machines were the tools of their trade," and also from "the reinvested earnings of the industry itself."[56] The "joint-stock partnership was the commonest form of organization...."[57]

Thus capitalized, the textile industry grew slowly for a decade; in 1804, there began "a significant shift of commercial capital into manufacturing."[58] When the Jeffersonian Embargo and then the War of 1812 "halted British imports, the Rhode Islanders had the manufacturing facilities, technical expertise, financial resources and market connections to capitalize on the sudden shortage of

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[54]Ware, Early New England Cotton Manufacture, p. 236.

[55]Ibid., p. 122.

[56]Ibid., pp. 122-123.

[57]Coleman, Transformation of Rhode Island, p. 81.

[58]Ibid., p. 84.

of foreign goods."[59] Some textile firms realized high rates of return on investment. This attracted investment by men who were looking for lucrative ways to employ otherwise idle capital. "Stimulated by high profits as well as by the transfer of capital from the depressed maritime industry, cotton manufacturing expanded rapidly.... The number of mills almost trebled and spinning capacity more than doubled."[60] In 1815 when peace with Great Britain was a reasonably certain prospect, this expansion of the industry was a matter of concern; Samuel Ogden, remarking on bad management practices, reflected, "that the greatest part of manufacturing firms have been established from speculative views more than a real spirited inclination to promote the business, is a certain fact."[61]

Samuel Slater divided Rhode Island mills into three classes:

> "Those actually run by their owners, those operated on borrowed capital by skilled mechanics or men who understood the business thoroughly, and those whose owners knew nothing about the cotton manufacture and simply hired a superintendant to run the business for them. Slater objected to the theoretical distinction between capitalist, employer, and

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[59]Coleman, Transformation of Rhode Island, pp. 84-85.

[60]Ibid., p. 86.

[61]Ogden, "Thoughts," pp. 22-23.

> laborer. He held that it did not apply to Rhode Island mills where one or two men put up the capital and managed the business entirely themselves, earning at one and the same time, their salaries, their profits, and their interest on their capital, and saving on their wage bill by employing members of their families as laborers. 'It is in this triple capacity of money lender, employer and laborer, that our most successful manufacturers have succeeded. Instances of ultimate failure among manufacturers of this description are very rare. Yet would their gross profits fall very far short of a fair remuneration to each, if those profits should be divided among three district classes of persons, such as some theorists have supposed.'[62]

Many Rhode Island mills were small family enterprises, where the owner or owners invested their savings, managed the business, and employed their families.

In "mills run by skilled mechanics operating on borrowed capital," the second type of ownership described by Slater, the mechanic-owner often "joined in partnership with those who could supply the funds, furnishing his labor as builder and manager in payment for his share in the undertaking. Such an arrangement was common in the small Pawtucket Valley mills."[63] Interestingly, Samuel Slater for most of his career considered himself a "spinner," a textile tradesman, rather than a

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[62]Ware, Early New England Cotton Manufacture, p. 131.

[63]Ibid., p. 132.

manufacturer or capitalist.[64]

As textile manufacturing became established and as some other areas for investment became less attractive, capitalists took interest in the industry. For example, in 1808, the firm of Brown and Ives, which had been extremely successful in maritime trade, entered into copartnership with Samuel Butler, Samuel Butler, Jr., and Seth Wheaton, to form the Blackstone Manufacturing Company. The Company had a capitalization of $150,000, representing 200 shares assessed at $750, and was probably the most heavily capitalized spinning company yet organized in America.[65]

Still the "predominant characteristic of the management of the early Rhode Island cotton mills was its personal and local nature. The business was by individual entrepreneurs or by partners, and not as corporations."[66]

> "...partners exercised care in selecting their business associates: they trained their sons to assume industrial responsibilities; and, occasionally, they cemented their industrial alliances by marriage.... Apart from silent members, each partner performed a specialized function. Some dealt with technical

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[64]William R. Bagnall, Samuel Slater and the Early Development of the Cotton Manufacture in the United States, (Middletown, Conn.: J. S. Stewart, Printer and Bookbinder, 1890), p. 51.

[65]James B. Hedges, The Browns of Providence Plantations, the Nineteenth Century, (Providence: Brown University Press, 1968), p. 175.

[66]Hadcock, "Labor Problems," p. 7.

> problems, others supervised particular phases of production, and still others served as business agents."[67]

In Massachusetts, the great mills, built according to the Waltham system, were organized as limited liability corporations and were usually capitalized at between one half and one million dollars. The result of this form of organization was that:

> The relationship of millworker to mill owner was profoundly altered, and both of them assumed a new status with regard to society as a whole. Corporate ownership involved the reallocation of those rights, responsibilities and powers which in earlier enterprises had been vested in the single person of the owner. The executives took over the duties of ownership and wielded the power; the stockholders acquired the rights. But the executives were just hirelings; they could not act independently; they were only agents of the stockholders. While the stockholders by sacrificing their power of immediate control, became 'rentiers.' They, too, were dependent upon rather than rulers of the business. There was a similar development at the opposite end of the scale. Mass production involved so many workers, that each was no longer personally engaged by a specific owner. All were the employees of a corporation; all became members of a proletarian class.[68]

By contrast, "most small Rhode Island companies...

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[67]Coleman, Transformation of Rhode Island, p. 81.

[68]John Coolidge, Mill and Mansion: A Study of Architecture and Society in Lowell, Massachusetts, 1820-1865, (New York: Columbia University Press, 1942), p. 16.

were unincorporated."[69] Later, when incorporation became a common form of business organization, the act of incorporation did not confer limited liability. "Such protection was granted to the shareholder in...Rhode Island in 1847."[70]

A motive force, a central energy to power the machinery was essential to the factory system of manufacturing. The use of power machinery was deemed desirable in the New Republic because it was a means to save labor, and the development of power sources was considered by some tantamount to a patriotic duty: for otherwise, "certain great 'natural powers' of the country will remain inactive and useless. Our numerous mill seats...would be given by Providence in vain."[71]

In colonial times, the supply of water power to run mills had been an important consideration in determining the location and success of settlements. Town proprietors were anxious that there be adequate sites for a mill in the town, and the mill, in turn was often a center of colonial life.[72]

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[69]Ware, Early New England Cotton Manufacture, p. 148.

[70]Ibid., p. 147, noting Rhode Island Acts and Resolves, June, 1847, p. 30.

[71]Coxe, A View of the United States, p. 14.

[72]Akagi, Town Proprietors, p. 88.

In England, the first textile factories had used water power. This use of water power was brought over to the United States. Thomas Marshall, an English immigrant who had extensive experience working in Arkwright's mills wrote to Alexander Hamilton in 1791 describing the planning for and location of a cotton manufactory; according to Marshall the first necessity was to obtain "Mechanics ...for the purpose of making machinery and assisting in the conducting of the manufactory..." and after that:

> "...it may next be proper to direct the attention towards an Eligible Spot for Erecting the Manufactory upon, in the Judicious choice of which very much indeed depends, the grand Object in this point is Water, and too much precaution and Circumspection in this particular is Impossible,....[73]

At the time of Slater's arrival, New England was well suited to the development of textile manufactoring because, among other things, it "abounded in available water power sites many of which were already well developed. By then, too, New England millwrights were thoroughly grounded in the fundamentals of power transmission."[74]

"The water powers of New England suggested the

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[73]Hamilton, Industrial and Commercial Correspondence, pp. 204-205.

[74]Pierson, "Industrial Architecture," p. 46.

sites of mills."[75] At first the mill seats in established communities were sufficient for the fledgling textile industry, but before the end of the first decade of the nineteenth century, most of these had been exploited. Many subsequent "factories were located off the beaten track"[76] because there was water power available. Thus "the cotton mill landscape reflects to a certain extent the stream network...."[77] The type of water power available in the Rhode Island region determined, in part, the character of the industry: small but numerous mills.[78] For example:

> "The Pawtuxet Valley of Rhode Island had furnished ideal sites for the earliest mills, for the stream was small enough and had sufficient drop so that it could be dammed at frequent intervals with very little outlay of capital and slight engineering skills."[79]

Reliance on water power as the motive force in the textile industry had a profound influence on the

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[75]Harry C. Meserve, "The Founding and Growth of Industrial New England," Transactions of the National Associations of Cotton Manufacturers, 116, 117 (1924), p. 63.

[76]John Coolidge, "Low Cost Housing, The New England Tradition," The New England Quarterly, 14, (March, 1941), p. 8.

[77]Burgy, New England Cotton Textile Industry, p. 4.

[78]Ibid., p. 27.

[79]Ware, Early New England Cotton Manufacture, pp. 81-82.

architecture of the factories, as well as on industrial geography: "The architectural problem...was to provide adequate space to accommodate the new machines, (and) to bring them into the most efficient relationship with the source of power...."[80]

And the reliance on water power pushed textile manufacturers into community building; Samuel Ogden wrote in 1815:

> "Necessity binds the generality of our cotton manufacturing firms to erect their spinning establishments where they can apply water to turn the machinery; and that often happens to be on a spot, near which there is not a dwelling house; and necessity also binds them to build houses for the work people. A store is also commonly found wanting, which is likewise built, and stocked with the necessary articles to supply those families employed in the factory, with what they may want for their support."[81]

In colonial New England, "The three principal types of early mills were the saw mill, the grist mill, and the fulling mill. Wherever there was a settlement these three, either singly or in combination, were built."[82] These early mills had a domestic appearance or looked like

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[80]Pierson, "Industrial Architecture," p. 22.

[81]Ogden, Thoughts, p. 26.

[82]Ibid., p. 8.

barns or worksheds.[83] These mills did not have the basic elements of the factory form. This form, however, had evolved in England:

> "By the time Hargreaves and Arkwright had developed their respective spinning machines there were approximately sixty...silk throwing mills in England, all of which were built to the same principles. Although varying in size, they were similar in that they were rectangular blocks several stories high. Superficially this would seem to be an expansion of the traditional small mill. But actually the long narrow proportions, the height, the ranges of windows, and the arrangement in layers of large areas of relatively unbroken interior space were elements which, when combined, in a single design had no real counterpart in English architectural history."[84]

The factory form was a response to a number of factors: the building had to be large enough to house a number of machines all of which were run by a central power source; it was cheaper to build up, doing so required less land, less foundation, and less roof than building out; the textile machinery was relatively light; and there had to be adequate interior lighting.[85]

The early English mills were built in the Georgain style because "there was not reason for either the industrialist or the millwright to question its validity.

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[83]For pictures of early mills see Martha Zimiles and Murray Zimiles, Early American Mills, (New York: Clarkson Potter, 1973), pp. 1-105.

[84]Pierson, "Industrial Architecture," p. 23.

[85]Ibid., pp. 23-25, passim.

The familiar forms could be easily adapted to meet the new requirements."[86] The early English mills were attractive.[87] Of the village and mills of Belper, England, Baines wrote in his History of the Cotton Manufacture: "Under their (textile manufacturers) auspices the handsome town of Belper has uprisen, built of hewn stone, with street flagged in the same, in regular houses on the most commodious plans, where the operatives with their families pass the tranquil tenor of their lives. The mills there, plainly elegant, built also of stone...."[88] The felicity of the

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[86]Pierson, "Industrial Architecture," p. 38.

[87]Francis D. Klingender, Art and the Industrial Revolution, (London: Transatlantic Arts Co. Ltd., 1947), p. 34, quotes Erasmus Darwin's description in verse of Arkwright's cotton mill at Cromford is quoted:

> "So now, where derwent rolls his dusky floods
> Through vaulted mountains, and a night of woods,
> The Nymph, Gossypia, treads the velvet sod
> And warms with rosy smiles the watery God;
> His ponderous oars to slender spindles turns,
> And pours o'er massy wheels his foamy urns;
> With playful charms her hoary lover wins
> And wields his trident,-while the Monarch spins.
> - First with nice eye emerging Naiads cull
> From leathery pods the vegetable wool;
> With wiry teeth revolving cards release
> The tangled knots, and smooth the ravell'd fleece;
> Next moves the iron hand with fingers fine,
> Combs the wide card, and forms the eternal line;
> Slow, with soft lips, the whirling can acquires
> The tender skeins, and wraps them in rising spires;
> With quickened pace successive rollers move,
> And these retain, and those extend the rove;
> Then fly the spoles, the rapid axles glow,
> And slowly circumvolves the labouring wheel below."

[88]Quoted in White, Memoir of Samuel Slater, p. 223.

early English textile factories' and villages' appearance was not accidental:

> "The primary concern of the men (early English industrialists) who built these factories was to make productive workshops. But serious attention was also given to their appearance. First, qualitative standards had not yet been superceded by those of quantity.... Further, the factory was a concrete symbol of the new industrial philosophy. During the eighteenth century (in England as well as America) resistence to the factory system was strong not only among the working people, but among the middle and upper class as well. If the factory was accepted at all, it had to take its place architecturally with other buildings."[89]

By the 1780's, the English factory had developed a characteristic form:

> "The basic unit of design was the rectangular block. Sometimes used singly, sometimes in combination, it was always several stories high and had long ranges of windows. The attic storey was lighted by either the skylights, the dormer, or the monitor window. All architectural elements were domestic in scale and decorative details were generally added in a simplified Georgian vernacular. Its construction was characterized by masonry walls and a heavy wooden interior framework."[90]

The factory had no counterpart in America during the eighteenth century[91] until the construction of the 'Old Slater Mill' in 1793. The Manufactory House in Boston

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[89]Pierson, "Industrial Architecture," p. 37.

[90]Ibid., pp. 39-40.

[91]Ibid., p. 4.

did not make use of a central motive force, rather it housed a number of individual hand looms and spinning wheels. The Beverly experiment was housed in a three story brick building, sixty feet in length and twenty feet in width, with a pitched roof and a deep basement, but:

> "There is no evidence that the essential feature of the factory, the superimposed layers of unbroken interior space, was employed. In fact, there is some indication that the interior was divided into rooms. Since the few carding machines did not require long shafting this would be a logical distribution of the interior space."[92]

As had been the case with a number of other architectural forms, the factory was brought to America by an immigrant. Samuel Slater, in addition to his knowledge of textile machinery understood and appreciated the practical aspects of factory construction. "During his apprenticeship with Strutt, Slater supervised the building of at least one factory and was overseer in another."[93]

American carpenters had a sound grasp of the building techniques essential to the construction of factories as Slater knew them. The heavy braced framing used in colonial building was readily adapted to meet the structural demands presented in the construction of textile

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[92]Pierson, "Industrial Architecture," pp. 48-49.

[93]Ibid., p. 40.

factories.[94] The colonial baroque architecture which New England carpenters had used in their building since the early eighteenth century was akin to the simplified Georgian architecture of the early English factories. New England factories thus belong architecturally to the "same righteous hard-working family as the colonial house...."[95] The vernacular ancestry is revealed in the framing and clapboard siding, the "plain unadorned form indicated its sober utility, but the proportions and rhythms of its openings and roof lines frequently revealed the hand of a careful designer relying on classical examples of his architectural surroundings."[96] Dutch brick work and stone masonry also provided "a precedent for textile mills throughout the first half of the nineteenth century."[97]

The small mill constructed by Almy, Brown and Slater in 1793, to house their spinning machinery was the first textile factory in the United States. "In some respects the Old Slater Mill is as much English as it is American. The most conspicuously English feature, which

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[94]Condit, American Building Art, The Nineteenth Century, p. 18.

[95]Scully, American Architecture and Urbanism, p. 52.

[96]Condit, American Building Art, The Nineteenth Century, p. 18.

[97]Ibid., p. 52.

was lacking in the Beverly mill, is the arrangement in layers of large areas of unbroken interior space."[98] Another English feature was "the monitor window...there is no evidence of its existence in the United States prior to its appearance in the Slater Mill."[99] In addition to building the machinery:

> "It seems probable that Slater also participated in the exterior design of the Mill. It may have been he, for example, who, following British precedent, suggested the use of a cupola to contain the factory bell. Yet the suggestion if made would have been consistent with American ideas and would have met with the sympathetic approval of Almy and Brown."[100]

Unlike the fulling, grist and saw mills of colonial New England villages, the Slater Mill was more than a mere workshop. Its creators "considered it sufficiently important to give it all the attributes of architecture."[101] The mill was simply yet superbly built, finely proportioned, its massing was direct and expressive, and its decorative features were delicately scaled.

The Slater Mill was the model for subsequent mill building, the simple sturdy frame construction so exactly

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[98]Pierson, "Industrial Architecture," p. 51.

[99]Ibid., p. 52.

[100]Ibid., p. 52.

[101]Ibid., p. 55.

fitted the requirements of the industry that there was no need to change, if mills "grew large and the machinery heavier, it was necessary only to increase the numbers and dimensions of posts and beams."[102]

Between 1790 and 1800, nine mill sites were developed in Rhode Island, with concentration in the Providence-Pawtucket area.[103] During the decade 1801-1810, when the new industry truly became established, forty-four more sites were developed and compared with the preceding decade "there is both a broader distribution across the state and an emerging concentration on the major water resources: the Blackstone, Flat, Pawtucket, and Woonasquatucket Rivers."[104] Another sixty-eight sites were developed between 1811-1820,[105] the decade during which the industry experienced a boom caused by the War of 1812. The decade 1821-1830 saw the development of forty-one more sites.[106] At the end of the early period of industry's development in Rhode Island, mills were scattered throughout the State and concentrated along the Blackstone River and to a lesser extent

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[102]Condit, American Building Art: The 19th Century, p. 18.

[103]Sande, "The Architecture of the Rhode Island Textile Industry," p. 163.

[104]Ibid.

[105]Ibid.

[106]Ibid.

along the Pawtuxet and Woonasquatucket Rivers.

As the textile industry got a foothold and spread, the mills increased in average size. "In the first decade mean length and width were 39 x 29 feet, the second 73 x 36 feet. In the third decade there was a slight decline in size probably attributable in part to the recession following the War of 1812."[107] In the fourth decade, 1820-1830, the trend was again toward larger mills. "Along with the general tendency for the plan dimensions to become larger, the ratio of width to length moves correspondingly upward. Thus not only do the mills become wider and longer, they also become narrower in proportion."[108] After the first decade, "Variations in height are less characteristic than those in size and shape...."[109]

"With the second decade of the century (the 19th) a new type of factory building was evolved. The mills began to lose their domestic character as their size increased and as masonry construction became more and more common."[110] Technology, however, limited the growth in size of mill buildings during the early period of the industry's development; the "shift to larger dimensions did

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[107]Sande, "The Architecture of Rhode Island Textile Industry," p. 175.

[108]Ibid., p. 177.

[109]Ibid., p. 177.

[110]Coolidge, Mill and Mansion, p. 30.

not occur until the introduction of metal shafting (which efficiently transmitted power over greater distances) in the 1830's and the turbine wheel (which generated more power) in 1843."[111]

The early mill owners "played the decisive role in determining the architectural qualities of their buildings."[112] For them, the buildings should be useful and practically combined to give satisfaction. Lavish ornament was both inappropriate and unnecessary."[113] Republican architecture, the post-Revolutionary development of colonial baroque architecture, was employed in building the early factories, supplying both basic form and detail.[114] These mills "reflect the taste and character of Moses

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[111]Pierson, "Industrial Architecture," p. 135.

[112]Sande, "The Architecture of the Rhode Island Textile Industry," p. xliv.

[113]Ibid., p. 226.

[114]Sande in "The Architecture of the Rhode Island Textile Industry," p. 222, notes that "The difference between Republican and other styles is frequently only a matter of degree, depending on how forcefully the decoration stands out from the essentially utilitarian shell." Sande gathered data on 103 mills built between 1790 and 1860, for the period 1790-1830, the breakdown of mills by decade according to style is:

Decade	Republican	Style			
		Greek Revival	Italianate	Eclectic	Mansard
1790-1800	2				
1801-1810	5				
1811-1820	12				
1821-1830	12	4	1	1	1

Brown and rely upon the eighteenth century for...form."[115]

The textile industry's expansion occurred with increased investment and improved machinery and took the form of more and larger factories. The number of people employed in the industry increased proportionately. Since water power was used to drive the machinery, the expansion required that factories be built at previously undeveloped mill seats, the necessity of housing the workers meant that mill villages had to be built.

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[115]Pierson, "Industrial Architecture," pp. 69-70.

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